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FLEET OWNER

JUNE
1935

DEVOTED to the BETTE
OPERATION and MAINTENANC
of all AUTOMOTIVE FLEET

FEATURE ARTICLES:

Systematic Maintenance Saves Money
By R. B. Jett

Maintaining a 25-Vehicle Coal Fleet
By Carl Arnold

The Basic Principles of Fleet Operation
By T. L. Preble

Insurance Practices Among 200 Fleets
By H. Clay Fischer

Helping you to Select Motor Oils
By H. R. Wolf

DEPARTMENTS:

Trouble Shooters' Forum
As We Go to Press (News)
John Law Sez: (Court Decisions)
New Products for Road and Shop
Question-of-the-Month Club

★ 11 NOW ★

10 MORE COMING

KOPPERS GAS AND COKE COMPANY

ST. WILLOUGHBY STREET
BROOKLYN, N.Y.

October 5, 1934

Aluminum Company of America,
1361 Gulf Avenue,
New York, N. Y.

Attention of Mr. Richard A. Jewett.

Dear Sirs:

In reply to your letter of September 11th, we are very glad to give you our experience with aluminum coke bodies.

We have eleven aluminum bodies which we have bought over the last two or three years, and have just ordered ten more to be delivered to us this month.

While we have not had these bodies in operation long enough to know positively that they will outlast the steel bodies, the amount of wear to date indicates that they will last longer than steel bodies and it is our opinion that they will outlast our steel bodies by a considerable margin.

The greatest advantage to us in using aluminum bodies is that they enable us to carry a larger pay load on any given size truck, and also bodies that we are able to keep the gross weight of the truck and load within the state requirements.

Since the tendency seems to be to limit the allowable gross weights, it is our present feeling that we will buy aluminum bodies from now on.

Yours very truly,

KOPPERS GAS AND COKE COMPANY

T. S. Fillibrown
Manager

TSF:eh

"WILL BUY ALUMINUM BODIES FROM NOW ON!"

● Nothing is more convincing than repeat orders. The 11 Alcoa Aluminum Bodies now operated by the Koppers Gas and Coke Company, Brooklyn, N. Y., must have "made good." Otherwise, why order 10 more.

Mr. Fillibrown's letter gives two reasons, both worth repeating. First, the larger pay-load made possible by the light, strong alloys of Alcoa Aluminum. Second, because it is possible to use large size trucks and still keep the gross weight of truck and load within the New York Highway Limit.

Nothing is said about maintenance costs, tire mileage, etc. But we confidently predict that each year of operation will show many additional advantages. Saving Facts will "out."

Our book "Alcoa Aluminum Truck Bodies" points the way to all of these savings. When may we send you a copy?

ALUMINUM COMPANY OF AMERICA
1361 Gulf Building, Pittsburgh, Pa.

ALCOA · ALUMINUM

HIGHER SHOULDERS—WIDER, DEEPER NON-SKID TREAD—MORE RUBBER ON THE ROAD . . . .

These Truck Tires Will Cut Operating Costs for You

FIRESTONE has constantly been the pioneer and leader in the development of balloon tires for trucks, and in the New Firestone Truck Tire for 1935 we have incorporated improvements that enable you to maintain uninterrupted schedules at higher speeds—at *lowest cost per mile.*

A new tread compound has been developed, which is *tougher* and *longer wearing.* The tread has been specially designed with higher, more rugged shoulders and wider, deeper non-skid, with *more rubber on the road.* It is possible to hold this thicker tread to the Gum-Dipped cord body because of the patented Firestone construction of two extra layers of Gum-Dipped cords under the tread. These improvements give you *greatest blowout protection* and *non-skid safety* for the higher hauling speeds of today.

Call on the Firestone Service Store or Firestone Tire Dealer in your community today. Let him show you how these amazing new tires will help cut your operating cost and give you *more dependable service.*

★★★★★ *Listen to the Voice of Firestone—featuring Richard Crooks, Gladys Swarthout, or Nelson Eddy—every Monday night over N. B. C. —WEAF Network . . . A Five Star Program*

See your nearest Firestone Service Store or Firestone Tire Dealer for today's prices on these tires

SPECIFY FIRESTONE TIRES ON YOUR NEW TRUCKS

FIRESTONE
OLDFIELD TYPE
The tire that taught thrift to millions

FIRESTONE
SENTINEL TYPE
Volume production tire for light trucks

FIRESTONE AUTO SUPPLIES FOR TRUCKS AND BUSES

EXTRA POWER BATTERIES
20% more starting power for every Trucking Service

FIRESTONE HEAVY DUTY SPARK PLUGS

FIRESTONE FAN BELTS

FIRESTONE BRAKE BLOCKS AND LINING

RADIATOR HOSE

Firestone

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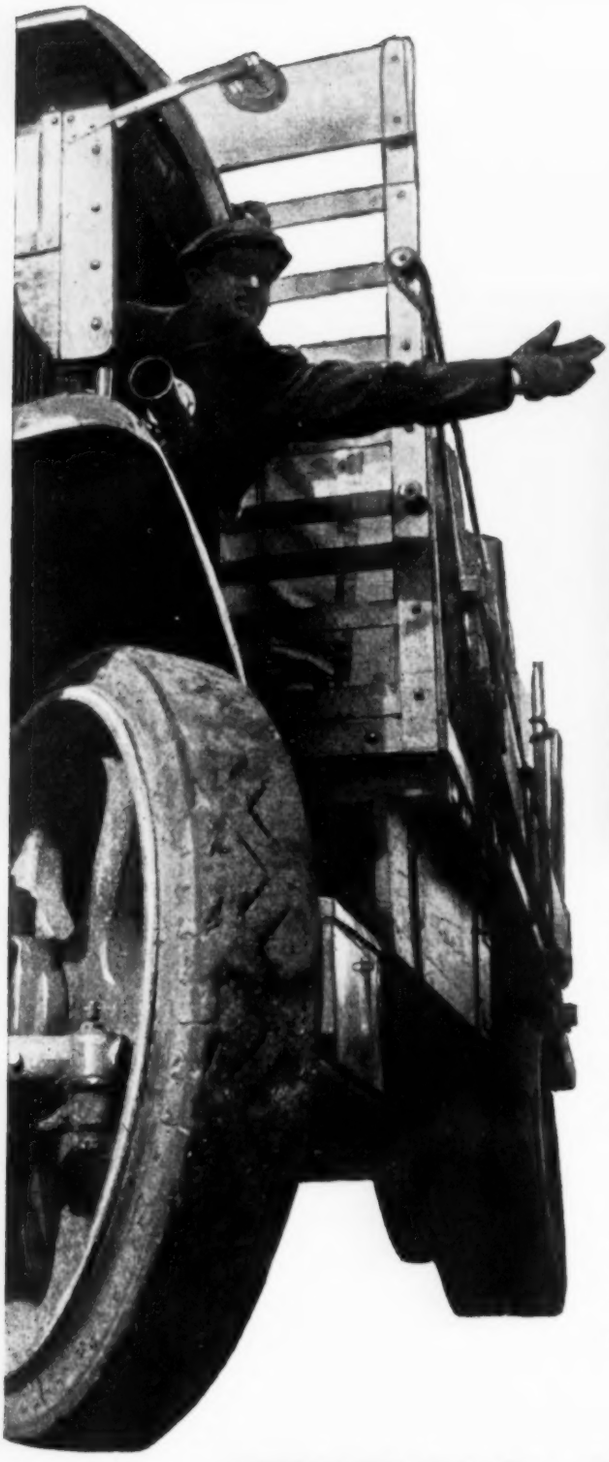
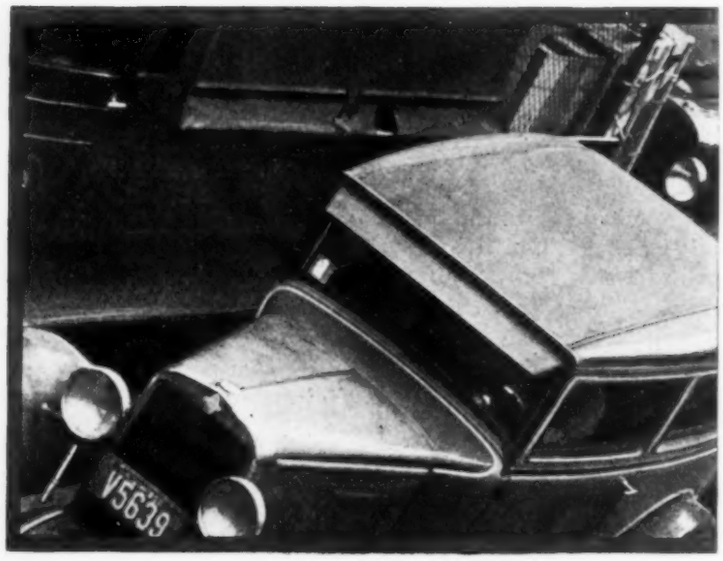
KEEPING TRUCKS

isn't always





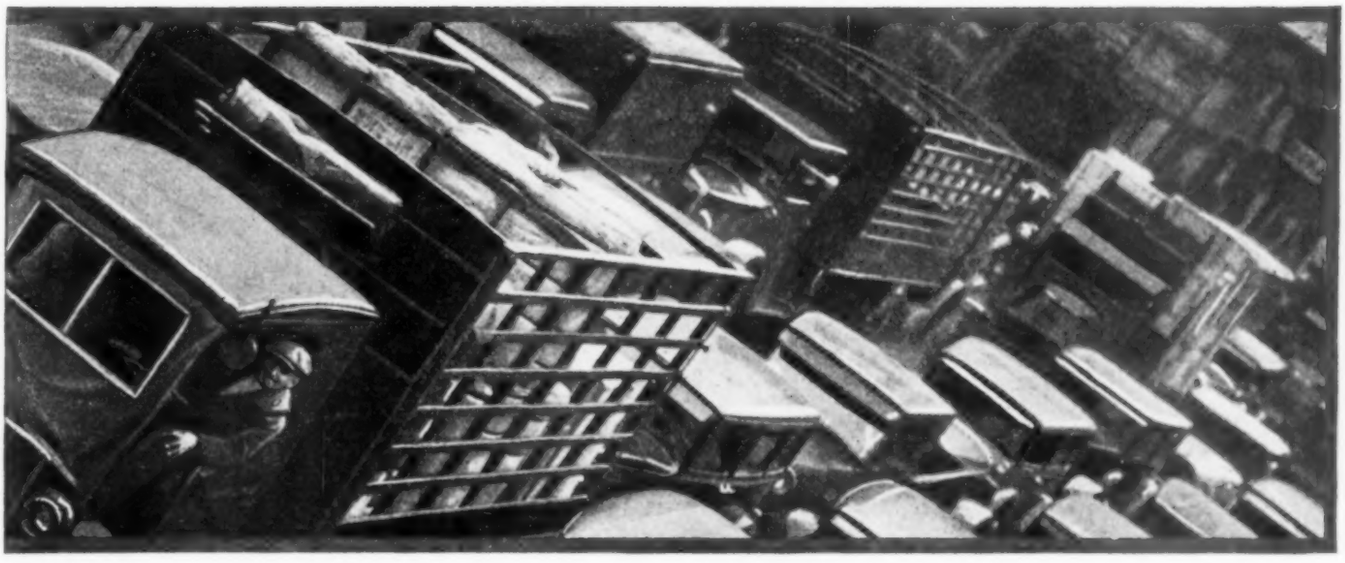
TRAFFIC DELAYS cost little compared with road failures or engines down for repairs. Such hazards to fleet operations are often the result of using unsuitable fuels and lubricants. And this is a matter that is strictly within your control.

Many of the country's largest truck fleets and bus systems have standardized on Texaco Fuels and Lubricants. They carefully study mileage figures, maintenance and repair expenses. This *always proves* the

TEXACO *tested*

REFINERY TESTED FOR UNIFORMITY . .

MOVING *a traffic problem!*



superior performance indicated by the consistently efficient operation of their vehicles.

Texaco helps your men to devise economies

The fact that Texaco has brought improved efficiencies and lower operating costs to many operators of trucks and buses, is *not a guarantee* that we can do the same thing for you. But it is a *definite assurance* that we have a thorough knowledge of what fuels and lubricants have to do in trucks. We impart this to your men.

With this knowledge, the men who are familiar with *your operating conditions*, often can devise the immediate benefits. This free and friendly service is yours for the asking. It will help your men to help you.

THE TEXAS COMPANY
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Nation-wide distribution facilities assure prompt delivery

LUBRICANTS

TEXACO

. . SERVICE TESTED FOR ECONOMY

The big West Coast Corporations depend on "UTILITY TRAILERS"

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Provide greater strength, lighter weight, and lower loading height—What more is there that counts?

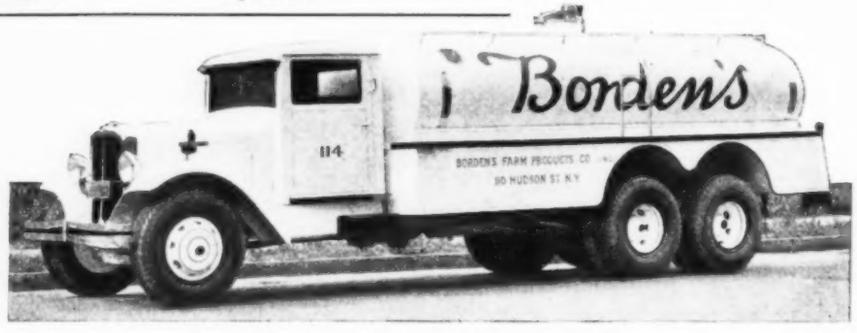
Utility Semi-Automatic Fifth Wheels

are rubber mounted to lessen riding and coupling shocks, and positive locking so that involuntary uncoupling is impossible.

Utility Six-Wheel Attachments (Third Axles)

UTILITY PIONEERED THE DEVELOPMENT OF TRAILING THIRD AXLES IN THE UNITED STATES.

EXPERIENCE IS THE BEST TEACHER. WHY EXPERIMENT.



Third axle on Borden's truck is a UTILITY

Note These Five Advantages— Exclusive in UTILITY

1. DRIVE WHEEL TRACTION INCREASES WHEN ACCELERATING.
2. BRAKE REACTION EQUALIZED.
3. TRUCK FRAME SUPPORTED AT FOUR POINTS BACK OF CAB.
4. NO CHANGE IN TRUCK, PARTS OR STANDARDS TO INSTALL.
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Utility is the largest Western United States manufacturer of TRAILERS ALSO SIX WHEEL ATTACHMENTS, (Third Axles).

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Successful bus operators and truck owners cut their operating costs by using Champions. Now in their 25th year, the motoring world acknowledges Champions' better performance by continuing to accord them preference above all others. In the world of racing, Champions have helped to win practically every major event for eleven straight years. With these facts as your guide, your choice in spark plugs is bound to be Champions.

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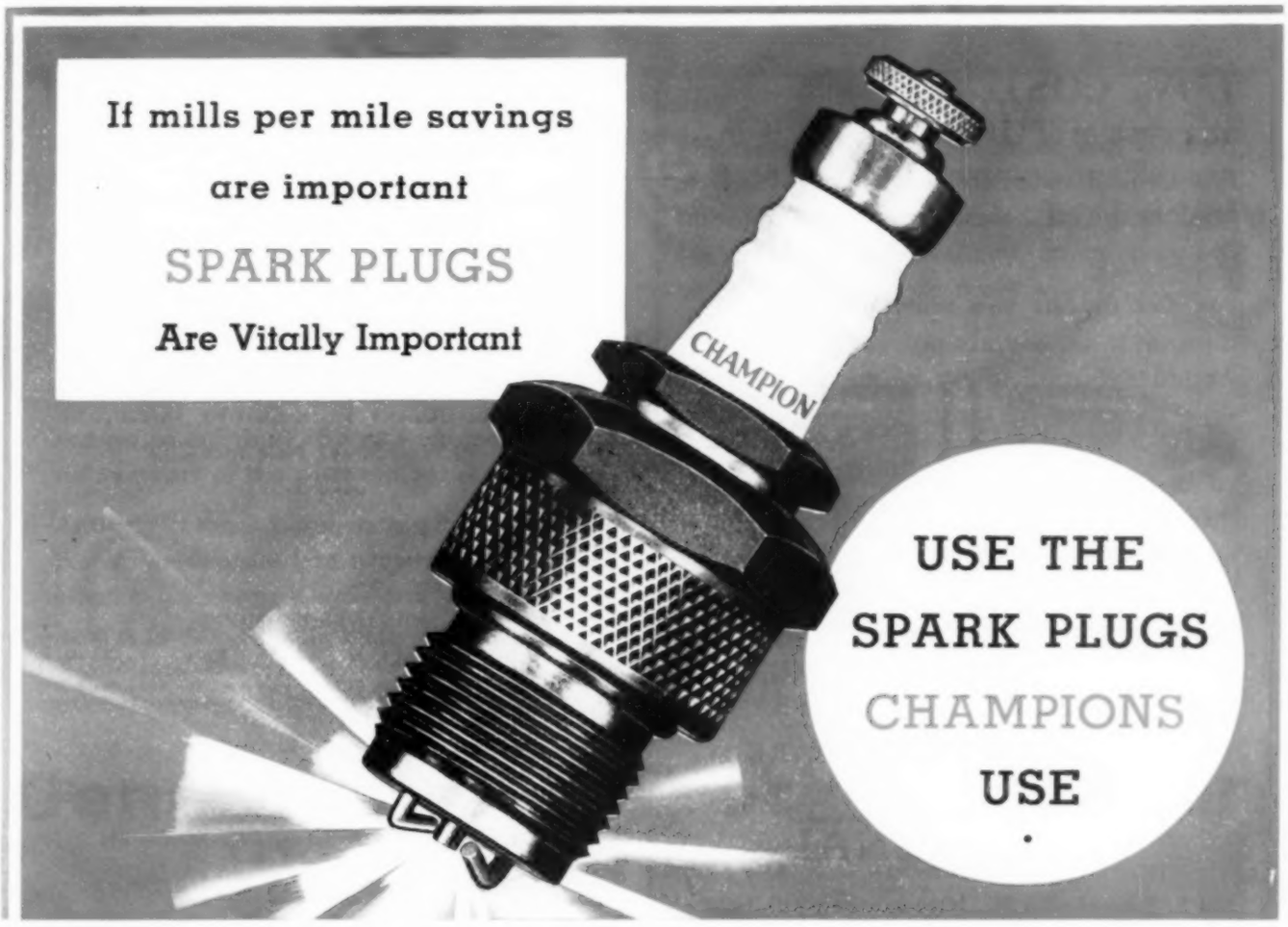
J. R. Gorman of United Parcel Service, says, "In a fleet that totals 10 million miles a year, dependability and economy are of paramount importance . . . we have used Champions for the past five years."



TO KEEP ENGINES YOUNG • TEST AND CHANGE SPARK PLUGS AT REGULAR INTERVALS

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IT FLASHES
and the car behind—KNOWS A TURN IS TO BE MADE.

IT BUZZES
and the driver—KNOWS THE SIGNAL IS ON.

PREVENTS ACCIDENTS
is the least costly safety insurance. It prevents accidents.

MAKES FRIENDS
creates a favorable attitude—toward trucks on the highway by removing the greatest objection to them.

LOW COST
the cost of TURNSIGNAL is insignificant compared to the service rendered.

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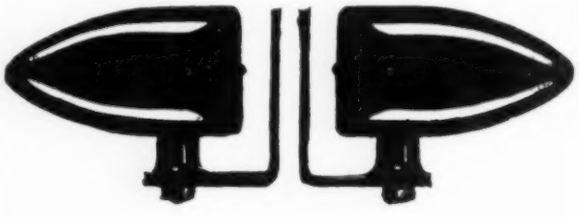

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The

FLEET OWNER

Published Monthly in the interests of Automotive Fleet Owners who maintain their own Repair and Service Shops and devoted to the better Operation and Maintenance of Truck, Trailer, Bus, Passenger Car, Taxicab and all Automotive Fleets.

VOL. 14 New York, June, 1935 No. 6

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Dual performance

. . . NOW

available in GMC 1½-2 ton

TRUCK OF VALUE!

Saves gas and oil, lessens wear and tear and assures more power, pick-up and speed.

Now users of trucks in the 1½-2 ton range can get DUAL PERFORMANCE—that revolutionary truck improvement that seasoned operators everywhere have been quick to recognize as one of the few major truck refinements of the past ten years.

Already in the 2-3 ton range, the GMC Dual Performance axle has proved its ability to effect big savings in gas and oil as well as lower maintenance costs inasmuch as there is far less wear and tear on engine and other driving units. Power, too, is more effectively utilized—the truck will climb a steeper grade, travel at faster speeds and handle bigger loads easier. All in all, Dual Performance saves money, saves time, enab'es the truck to do more work.

Weigh well the importance of this great GMC truck feature. Weigh, too, the importance of every one of the additional 47 cost-reducing features of the GMC 1½-2 ton truck of value, the truck that out-scores each of its chief competitors on many counts—out-scores with such important features as greater payload capacity, higher sustained torque and Lockheed hydraulic brakes with centrifuse drums and unusually large, quality brake linings.

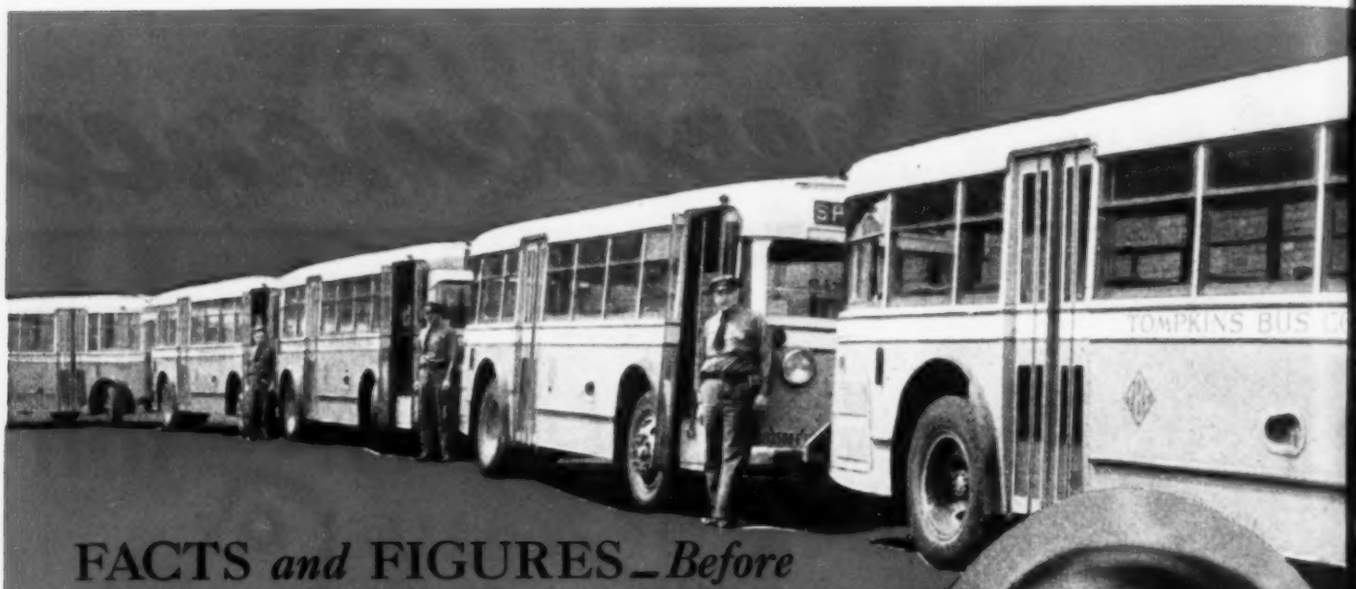
General Motors Trucks & Trailers

1½-22 TONS

GENERAL MOTORS TRUCK CO. Time Payments Available Through Our Own Y. M. A. C. PONTIAC, MICHIGAN

TOMPKINS BUS

makes an Annual Saving of



FACTS *and* FIGURES—*Before and After 22 months operation, as submitted by* Mr. CHARLES W. BANKER, *General Manager*

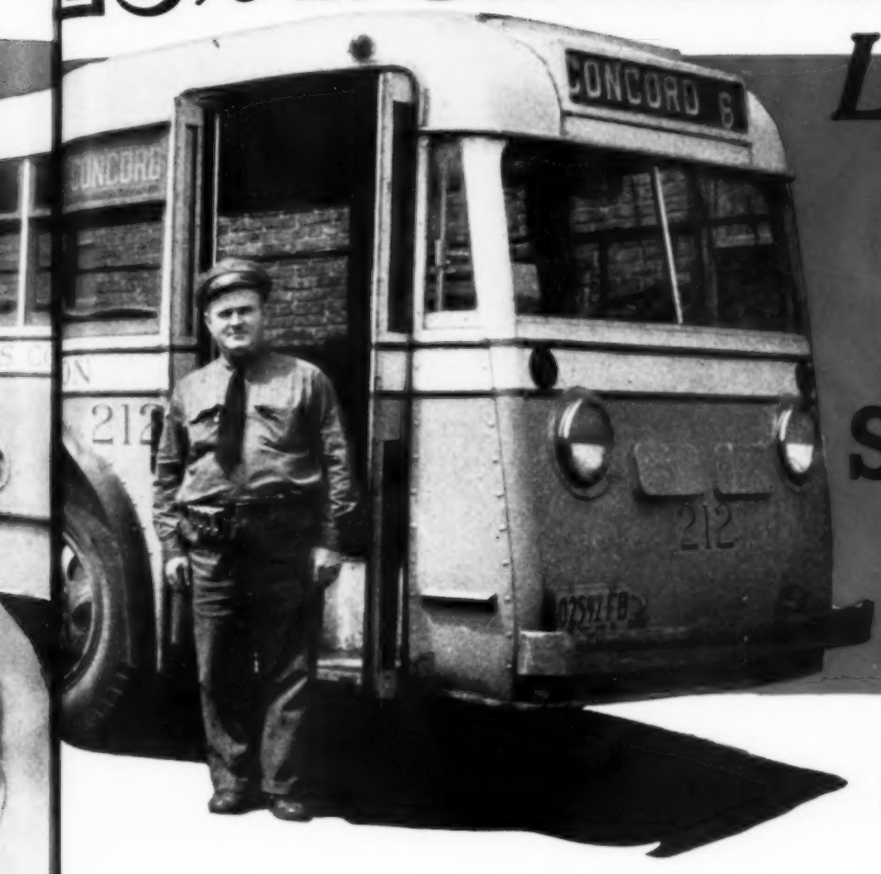
Average annual mileage (Prior to July 1st, 1933)	3,500,000
Average annual mileage (Since July 1st, 1933)	3,500,000
Average number of buses operated	82
Annual gallonage of gas consumed (Prior to July 1st, 1933)	1,250,000
Annual gallonage of gas consumed (Since July 1st, 1933)	1,000,000
Saving in gas consumption (250,000 gallons)	20%
Average mileage per gallon (Prior to July 1st, 1933)	2.7
Average mileage per gallon (Since July 1st, 1933)	3.5
Average cost per mile Motor Oil, Gear Oil and Grease—(Prior to July 1st, 1933)	$.0033
Average cost per mile Motor Oil, Gear Oil and Grease—(Since July 1st, 1933)	$.0025
Saving	24%

SOCONY-VACUUM

MOBILGAS • MOBILOIL •

CORPORATION

20% in Gasoline *and Reduces*



Lubrication Cost 24% with

SOCONY-VACUUM PRODUCTS

A few of the Tompkins Bus Corporation's efficient fleet of 82 buses, fueled and lubricated with Socony-Vacuum Products.

THE TOMPKINS BUS CORPORATION operates 82 buses which average 3,500,000 miles annually over steep grades on business and suburban routes in Staten Island, New York.

Since taking over the management of this operation about two years ago, Mr. Charles W. Banker has effected considerable savings in operating costs.

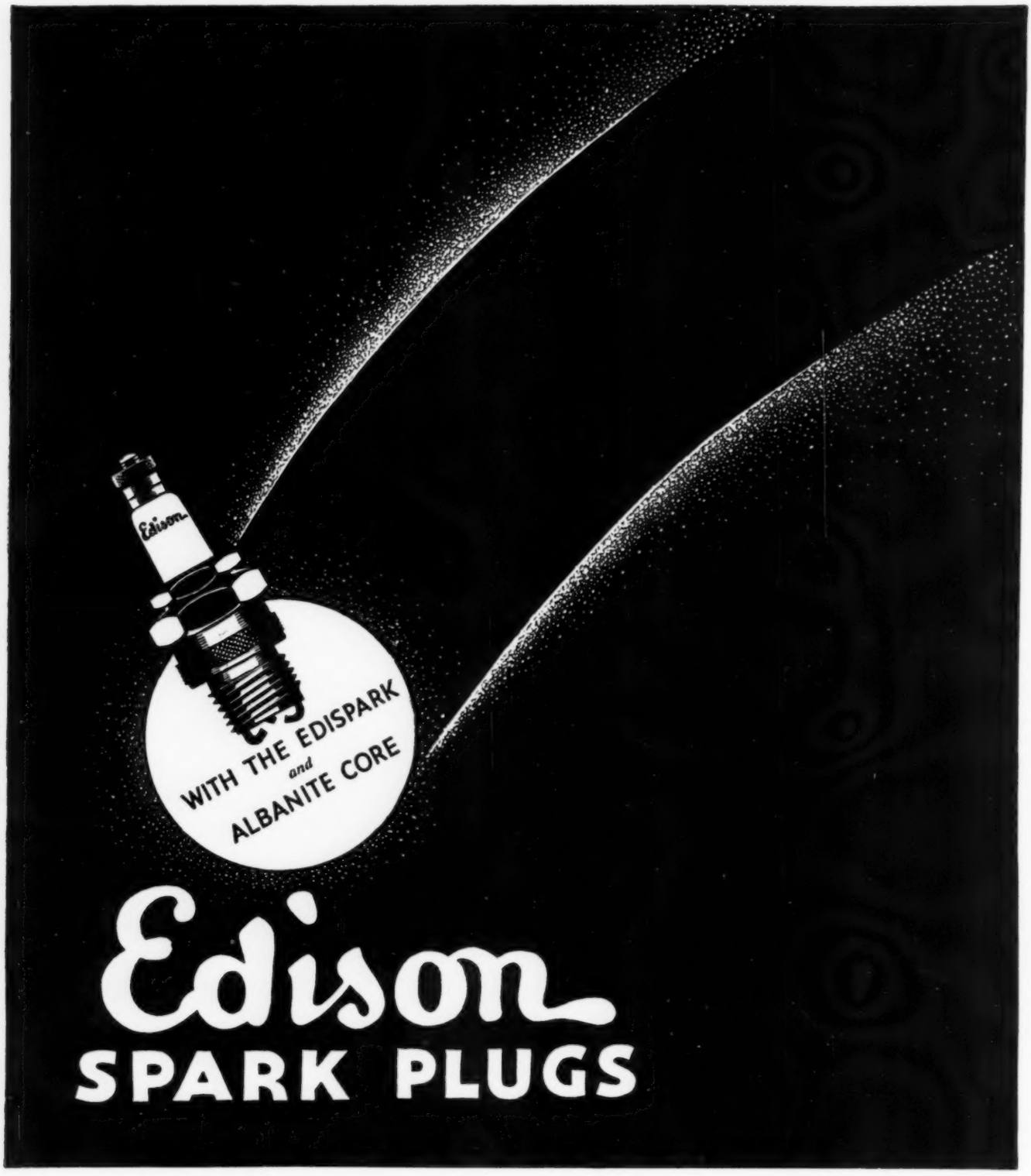
The actual figures show savings of 20% in gasoline consumption and a reduction of 24% in lubrication costs. These results are attributed largely to the high quality of Socony-Vacuum gasoline and heavy-duty bus lubricants.

Similar savings can be effected by other bus companies by changing to Socony-Vacuum. We would like an opportunity to prove to you that you can parallel the Tompkins Bus Corporation's experience, and operate your buses at lower cost of maintenance and with greater efficiency by using Socony-Vacuum Products.

SOCONY-VACUUM OIL COMPANY, INC.

STANDARD OIL OF NEW YORK DIVISION • WHITE STAR DIVISION • LUBRITE DIVISION • WHITE EAGLE DIVISION • WADHAMS OIL COMPANY • MAGNOLIA PETROLEUM COMPANY • GENERAL PETROLEUM CORPORATION OF CALIF.

•MOBILGREASE • MOBILUBE



TRUCKS and buses must be built for a long life — and a *hard one!* So must the spark plugs that keep them on the move and keep their owners *in the money.* Throughout the heavy duty field "Edison" is now known as "the plug that was built for the job."

EDISON-SPLITDORF CORPORATION, WEST ORANGE, N. J.

ONE OF THE Thomas A Edison INDUSTRIES

VOL. 14
NO. 6

FLEET OWNER

JUNE
1935

DEVOTED TO THE BETTER OPERATION AND MAINTENANCE OF TRUCK, TRAILER, BUS, TAXICAB, PASSENGER CAR, AND ALL AUTOMOTIVE FLEETS.

Stripping *the* Thread » »

(The Editor's Column)

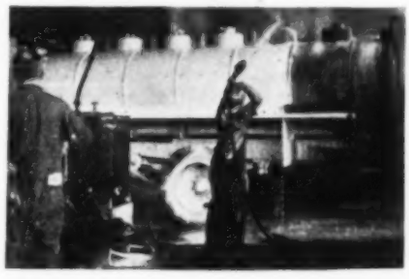
WHO WANTS AN INDEX?

● One or two of our steady contributors have suggested that we print an annual index to the various articles and subjects covered editorially in their favorite publication. . . . It occurs to us that this might turn out to be a very valuable service, and we are willing to do it, providing that it will be *used*, and that a demand actually exists for such an index. . . . We *know* that many operators save their back numbers of FLEET OWNER and file them away for future reference. . . . Therefore, if you will be good enough to write us a short note, stating that you won't throw our index into the waste-basket, we'll be very glad to make up such an index, and mail it to you without cost or obligation. . . . And we'll have a better idea as to how many copies of this index we should print, if you write us; so let's hear from you if you think such a service would be valuable.

●

THE "TAKING-OFF" TOOL?

● During the past couple of years, we've worried so much about the *application* of paints to trucks and buses, that we almost completely neglected to say anything about *removing* old paints. . . . That is, until the article in our April issue appeared. As a result, and because the subject was of such general interest, we received inquiries from all over these good old United States, for "more dope" on the subject. . . . One man even sent us a panel which was covered with countless coats of primers, lacquers and synthetics. . . . Like a good sport, we turned it over to a maker of stripping material, and it looks as if *that* problem is solved. . . . We also tried a little stripping on our own account, for which we were dubbed, "the old cold-stripper, himself." . . . It so happened that we were up against the problem of removing many, many coats of paint from the bottom and sides of our yacht tender—one doesn't have a tender, and no yacht, you know. . . . Much to the surprise of the professional ship-yard painters, the new method worked, save for the fact that the original coat, which happened to be lacquer, was immovable, so that we had to resort to orthodox varnish removers. . . . Although the wise boys were able to say, "We told you so!" nevertheless we were able



to point out that our *total* cost was less, and would have been *still* less, if the first coat had not been lacquer. . . . If this sounds like a "brief" for the alkali type of remover, it's a well-earned one. The purpose of this editorial, however, is to point out the fact that your Editor likes to put new developments to a practical test, before turning them over for you to do the experimenting. . . . There are two kinds of Editors—the fellow who can *do* things, as well as *write* about them—and the fellow who can only *write* about them. . . . If you would like to find out for yourself, first-hand, as to which category Yours Truly belongs in, just ask us to come up'n see you some time. . . . We like our swivel-chair, all right, but we also get a great kick out of doing the things that you have to do. . . . The only difference is that with you it's a *vocation;* with us, it's a *vacation.*

●

SERVICE PLUS

● After 22 years of service, we are told, the connecting-rod bearings of one of the fire trucks used by a New England municipality, became worn sufficiently to make replacement necessary. Because of the age of the truck, new bearings could not be obtained locally and it was believed that they could not be obtained at all. . . . Even though you may not believe it, the factory was wired and the bearings were shipped the same day. Since the truck was a very important part of the city's fire-fighting apparatus, delay would probably have been disastrous had a serious fire broken out . . . All of which is just our way of complimenting the truck manufacturer for rendering a fine type of service plus . . . It would not be in order for us to publicly shower *any* truck manufacturer with bouquets. Even if you guessed who it was, it would be of little concern, since trucks of that make are no longer being manufactured . . . The moral is there, however, and if all other truck manufacturers offered the same calibre of service, all of us should be happy. And several of them do, we understand.

●

H. Clay Fischer
Editor

YOU SEE IT "FIRST" IN FLEET OWNER

The Editor's Column » »

(Continued from Page 13)

SOMETHING TO READ

● Our latest effort to provide you with current trade literature, without obligation of any kind, appears on page 54 of this issue. . . . The idea, of course, is not new, since we have been doing this in our own, quiet way for several years. This is the way it works: Your Editor carefully goes through every piece of mail matter that comes to his desk each month, and singles out those that are of *intimate* interest to fleets. . . . Undoubtedly you will have noted that we do *not* attempt to clutter up the page with a lot of poorly chosen advertising matter. Rather, we limit our selection to *ten* booklets, and describe them *truthfully*, so that if you would like to get free copies, all you have to do is use the coupon which appears on the same page, mailing it in to Brother Fischer. . . . Whereupon the booklets are sent to you by *mail* and there is no high-pressure effort to sell you anything—that's our promise! . . . When discussing this matter with fleet men, some have remarked that certain publications cram in as many listings as the page will hold; others run several pages of the stuff, the idea being, obviously, to get as many "leads" as possible, for manufacturers' salesmen to follow up. . . . Not so, with the literature that *we* offer, however, since we feature only *ten* pieces each month, and *guarantee* them to be of interest to the fleet executive. . . . Why not dare us to *prove* our story, and send for some of the literature that is mentioned on page 54 of this issue? . . . While it is a very nice thing to be able to show a manufacturer that our readers are interested in his product, please let us assure you that the page is *primarily* to help keep YOU posted on new literature. . . . And everyone wants to keep abreast of latest developments in this constantly-changing field. Don't you, too?

●

NOW IT'S COLONEL, SUH!

● W. G. Kearney, assistant manager of the truck and bus tire sales division, in charge of direct sales of The B. F. Goodrich Company has just been made a "colonel" of Kentucky by Governor Ruby Laffoon of that state. "Bill," as Kearney is known to hundreds of fleet operators throughout the country, opines that this new honor means he must learn how to correctly drink a mint julep and to attend the annual Kentucky Derby and the "Colonels' Ball" which precedes it.

●

ANOTHER FOR RIPLEY

● The famed cartoonist would do well to copy the accompanying photograph and present it to his readers. . . . It's a test, of course, conducted by a tire company, in which a "torture road" composed of a sea of spikes was used, as shown. . . . The car was driven back and forth across it, all day long, they tell us, and at the end of the day, a total of 2,498 (2,500 if you will) nails were picked up by the tires. . . . But that's not all. The nails were allowed to remain in the tires and the car was driven for three days more, after

which the nails were removed and, believe it or not, none of the tires went flat. . . . The mystery can be explained by telling you that a new type of puncture-sealing tube was used. As to which one, if you have been alert, you would have read the name of the manufacturer in a previous issue of your favorite publication. . . . To repeat the name here would brand us as unethical—and you know we're anything but that.

●

OWN THEM OR HIRE THEM?

● The much-mooted question of whether it's cheaper to operate your own salesmen's cars, let the salesmen own them, or to hire them from someone else, is brought to mind once more on the occasion of a visit we have just had with a firm which advocates the last-mentioned method. . . . For a flat per-month sum, or for a payment of so-much per mile, they offer to furnish a brand new coach each year, and throw in such incidentals as repairs, license plates, fire-theft-collision insurance, tire-and-road service, chains and anti-freeze. In fact, everything but gas, oil and the more expensive types of insurance . . . Of course, they claim that it is more economical for you to "play ball" with them, than to own your equipment outright. Until we've given the matter more careful thought, we'll hold back our opinion, although it is hard to overlook the fact that they are making a *profit* on the transaction, which, with careful management might be conserved within the four walls of the fleet operation . . . In the meantime, while we're making up our opinion, we'd be glad indeed to hear from fleet operators who have had experience of this nature. We'd also like to know what it is costing you per mile, to operate your sales cars . . . But you'll be sure to include *all* costs, including overhead, storage, depreciation and interest; otherwise the figures won't mean anything. There are altogether too many operators, particularly among the smaller fleets, who do not actually know what it is costing to operate their cars; therefore the subject should be of universal interest. Will we hear from you? Thanks.

●

BUTANE-PROPANE HANDBOOK

● Technically-inclined fleet men have no doubt been giving much thought to the use of butane and propane gases as a possible automotive engine fuel. . . . In fact, considerable activity of this kind has been going on out on the Pacific Coast within recent years. . . . We haven't said very much about it, because the fuel itself is not yet generally available and there still remains much to be done along the lines of development work. . . . To those who are interested, may we recommend the second edition of the *Butane-Propane Handbook*, recently off the press. . . . This will tell you everything you want to know about these gases, including their usage as a fuel for internal-combustion engines of all types. . . . The book is a 400-page volume, 9" x 12", and has 122 tables and 223 illustrations. . . . Frankly, most of the information in it is over *our* head, but many engineering-minded operators will find it a valuable encyclopedia on the subject. . . . We'll be glad to send you a copy, if you want it, but don't forget to enclose a check for five bucks. . . . Or, if you'd rather order it from the publishers, the price is the same, and the address is "Western Gas, 810 S. Spring St., Los Angeles, Calif."

Averages 54,104 MILES *with these* NEW HEALTHY PLUGS

"THESE new Pyro-Action Spark Plugs," said our representative to a large bus company in Ohio, "will lower your spark plug cost-per-mile."

"All right," said the manager, "we'll try them." So they installed a test set in an 8 cylinder bus which had required new plugs after 10,408 miles. Here's the mileage record of the Pyro-Action Plugs to which they changed:

1 removed at 51,009 miles
1 removed at 60,673 miles
2 removed at 61,543 miles
1 removed at 67,905 miles
1 removed at 68,097 miles
2 removed at 72,665 miles

An average record of over 54,000 miles per plug! In the same bus and the same service where other plugs failed at barely 10,000 miles! That's low maintenance! That's long spark plug life! That's low spark plug cost-per-mile!

Test these new Pyro-Action Plugs in your own buses or trucks. Prove to yourself the stamina of the new insulator; the corrosion-resisting qualities of the heavier electrodes. Prove to yourself how the wider heat range simplifies and insures correct plug selection—for only 12 types cover all standard engine requirements. Prove to yourself how these advances in design and construction lower spark plug cost-per-mile—give you the greatest road dependability you have ever known!

Made by

UNITED AMERICAN BOSCH CORP.

Springfield, Mass. New York Chicago Detroit

The American-Bosch organization has always taken pride in creating, building and selling products superior to those commonly in use. Proven leaders in their fields, these products are built up to a high standard of quality and not down to a price.

Pyro-Action

the HEALTHY *Spark Plugs*

DESIGN AND LICENSE ROBERT BOSCH A.-G.

• TIRE RECORDS . . . . . • GET IT HOT! . . . . . STRIKE!

SYSTEMATIC

• SAVES • MONEY • FOR •

CARING for a "standardized" fleet is a simple matter, compared to the job of maintaining such a diversified fleet as this one. . . . Municipalities throughout the country will find this article of intimate interest. . . . All other types of fleets should find it valuable, too.—H. C. F.

MAINTAINING a fleet of 131 trucks, ranging from ½ to 5-tons capacity is no small job in itself, but when four ambulances, two patrol cars, thirty-four squad cars, five other automobiles, and twenty-six motorcycles are added, the fleet executive is faced with a much more complicated task.

Such is the job which R. B. Jett, Superintendent of the Motor Transport Department, City of Atlanta, Ga., has been handling with exceptional facility since 1919. But that is not all. Mr. Jett is responsible not only for the efficient operation of the city's fleet of 203 trucks, cars, and motorcycles but also for the mechanical condition of ten street-sweepers, three steam and three gasoline-rollers, several jack-hammers and air-compressors, one tractor, a grader, and other equipment operated by the various city departments.

The municipal garage also maintains the equipment employed by the municipal rock quarry, which includes two steam-engines, two boilers, one rock-drill, two stone-crushers, and one air-compressor.

It is obvious that a service organization set up to handle a job of this scope must contain a number of specialists not ordinarily found in the average fleet garage. Also, the equipment, tools, and facilities must be adequate to meet the many problems that are bound to arise. Such an organization has been built up by Mr. Jett in the sixteen years he has been in charge of the city garage. He is also largely responsible for the efficient plant which houses these manifold activities, all of which he is justly proud of.

In subsequent paragraphs we shall give a complete description of the garage and maintenance plant. First, however, let us relate the "systematic" maintenance procedure utilized here, which has proved itself to be saving thousands of dollars yearly for the City of Atlanta.

This well-equipped organization handles all repairs on automotive equipment except tire-casing and radiator-core repairs; provision is now being made to handle the latter. Even the short-wave radio sets of the police cars are maintained by Mr. Jett's organization except when complicated radio chassis work is required. One mechanic is on duty at night to provide emergency service on police cars and other equipment.

At the time of our interviewer's visit, one of the repair jobs in progress which graphically demonstrated the versatility of this organization was the rebuilding of a rather ancient steam engine, part of the city quarry equipment, and

• R. B. JETT, SUPERINTENDENT, ON THE JOB

STRIKE! . . . . . • MIKE! . . . . . .

MAINTENANCE

• CITY • OF • ATLANTA, GA. •

An Interview with

R. B. Jett, Superintendent,

Motor Transport Dept., City of Atlanta, Ga.

the rebuilding of a modern gasoline-powered air-compressor belonging to the same department. Mr. Jett also called attention to the fact that in addition to maintaining the ten street-sweepers, the department also manufactures both wire and fiber brushes for these sweepers, thus materially reducing upkeep expense.

One policy which assists in the reduction of truck operating expense is that of having spare engines, transmissions, clutches, rear axles, and other units quickly available for the trucks and cars. These spare units are, of course, kept only for the types of vehicles of which the city has the greatest number.

As a result, when one of the city's sanitation or construction department trucks requires extensive engine or other unit repairs, the auxiliary unit is quickly installed and the activities of the department operating the vehicle are not delayed. Immediately the overhauling work is begun on the unit taken out of the truck, and as soon as completed the unit is placed in stock to be used in another vehicle when need arises.

Scheduled maintenance is a fetish with Mr. Jett, and it must be, if he is to keep the city's equipment working on an economical basis, for many of the units operated by Atlanta—and this is true in the majority of municipalities—are old enough to justify replacement before the city is able to purchase new units. Recently several new Model C-50 International trucks have been added to the city's sanitation department equipment. These have fully enclosed cabs and dump bodies designed and built by the city's own garage staff.

Regular inspections, thorough greasing at stated intervals, and careful workmanship when repairs are required are the main reasons for the excellent success of this department in the economical maintenance of the city's rolling equipment.

An example of the thoroughness with which the schedules of this organization have been worked out is found in the greasing chart which hangs on the wall over the greasing pit. On this chart are listed all of the vehicles owned by the city of Atlanta. Each time a truck or car is greased, the date and mileage are recorded opposite the vehicle number. At the same time, the driver is instructed when to bring his vehicle in again for lubrication.

Mr. Jett, however, does not depend on the driver to bring the truck in at a certain stated mileage. Instead, he has worked out a definite schedule for each ve-

• J. H. TODD, INSPECTOR, CHECKING 'EM OUT

hicle, based on his own knowledge of the mileage covered and the work done by the equipment.

A perpetual inventory of gasoline and oil is maintained. Three men working in three shifts are employed in the gasoline and oil department, thus giving 24-hour service to the city's vehicles. When one man relieves another, accurate measurements are taken of the fuel in the tanks. These measurements are made with gauges accurately calibrated to each tank, thus enabling the garage bookkeeper, J. H. Connor, who has kept the department records for the past ten years, to check closely on fuel purchases and disbursements.

The care exercised in the handling of fuel has been well worth the possible slight additional cost, if any, of such a check-up. For instance, Mr. Connor's records show that in 1934 the city purchased 396,245 gallons of gasoline and charged to individual trucks, automobiles, or motorcycles 395,610 gallons, leaving only 635 gallons, or a .0016 per cent "shrinkage," an unusually low figure in this type of operation. Oil companies usually consider .004 per cent a fair gasoline shrinkage loss.

Parts and tire inventories are also perpetual. While parts for most of the trucks and cars are quickly available in Atlanta, a stock of approximately $10,000 in value is maintained at the city garage. This does not include the spare engines and other units previously mentioned.

The garage is a steel-framed building with corrugated steel walls and roof, 90 by 200 feet. One-half of this building was completed in 1932 and the other portion late in 1934 after the old, inadequate garage structure was burned. Aside from the office, stock room, and tool room walls, the expansive space is divided by only one partition. No other obstructions or pillars clutter up the spacious, well-arranged working floor. Light and ventilation are provided by large, steel-framed windows. Throughout the building the floor is of smooth concrete.

• SEVERAL OF THESE JUST ADDED TO THE FLEET

At the front of the building as one enters are, Mr. Jett's office at the right, and at the left, the general office where records are kept. The parts, tire, and stock room and a special room devoted entirely to engine overhauling and testing are also located at the front of the building. The remainder of this section of the building is devoted to the service floor for automotive equipment, with work-benches arranged along the north wall, under the windows.

Trucks and cars to be worked on are run in facing the windows. Opposite the service floor and in the same room are the washing and greasing equipment. In this room, also conveniently located, is the battery-charging department. A special room, easily accessible to all mechanics, houses tool equipment, drill presses, welding apparatus, cylinder re-boring and other necessary machines.

The rear part of the building is occupied by a second and larger machine shop and the woodworking and blacksmith shops, all of the equipment being arranged so as to facilitate repair work on the city's various heavy-duty machines. Here, also, adequate space has been provided for the manufacture of all dump and garbage bodies used on city trucks.

Lathes and other machine tools, as well as all the woodworking equipment, are arranged along the north wall, where adequate light is available. It is interesting to note that all installations of the machine equipment, electric motors, and line shafts in the new garage were done by the regular force of

• SYSTEMATIC GREASING . . . • STOCKKEEPING . . . . . • BATTERY CHARGING . . . .

ne of two White Model 731 units operated by Providence eaming Company, Inc. Equipped with 25-foot body.

WHITE "Underslung Power!"* BRINGS NEW PERFORMANCE and ECONOMY TO HEAVY DUTY FIELD

"Underslung Power" Whites—made possible by the exclusive White 12-cylinder "pancake" engine—are establishing records for performance and economy never before approached in the heavy duty field. Every claim made for White "Underslung Power" is now being proved in daily service.

The experience of Providence Teaming Co., Inc., Providence, R. I., is typical. The White Model 731 shown passed the official State engine performance and ability test with an unheard of performance. Required to ascend a 4% grade at not less than 20 m. p. h. this "Underslung Power" White actually *gained speed* in fourth gear on the grade with a gross weight of 40,000 pounds!

On a night trip to New York over many hills, with 40,000 lbs. gross, this unit arrived in six hours and driver reported remarkable comfort and no eye strain, due to excellent visibility of cab. In spite of rain and sleet on return trip the White came through with the same gross while all other trucks pulled off waiting for the hills to be sanded. No oil had to be added at the end of the run.

Oil companies, dairies, moving and storage companies and inter-city operators are finding White "Underslung Power" ideal—and especially adaptable to the modern streamline body types—tank or van.

For full information see your White Branch or Dealer or write The White Motor Company, Cleveland.

pyright 1935, The White Motor Company

WHITE INTERMEDIATE MODELS

MODEL 712 17,000 lbs. gross — **MODEL 718** 20,000 lbs. gross

Gasoline mileages up to 8 miles per gallon; more than ample reserve power for hills and tough jobs; day in and day out operation without interruption; better than capacity loads with safety and economy when necessary—unsolicited reports like these from hundreds of operators prove that these Whites will out-perform and out-live all other trucks in their field. They will give you a greater dollar return than any other trucks of the same capacities on the market today.

★

White TRUCKS

mechanics. Some of the equipment salvaged from the recent fire was reconditioned for service in the new garage, but many additional machines and tools have been purchased so as to extend the scope of the organization's activities.

The careful arrangement of machines to speed up the work and the accurate alignment of shafts, reducing friction and power costs, are among the things which impress one in even a superficial inspection of this plant. At the west end of this room is the blacksmith shop with its three modern forges and all equipment necessary to handle any type of blacksmith work.

• TWO "MOTOR SPECIALISTS" LIKE THIS . . . .

The personnel of the City of Atlanta garage consists of thirty men, in addition to Mr. Jett and Mr. Connor. The general foreman is W. H. Smith; the inspector, J. H. Todd; and the stock man, J. G. Jones. The remainder of the staff consists of, a clerk in the office, three men in the gasoline and oil department, one night grease man, and twelve mechanics, of which two are motor specialists. There are also two machinists, one man in the woodworking shop, three blacksmiths and four helpers.

The first of each year Mr. Jett makes up his annual budget. This covers the following items: pay roll; office supplies; operating supplies, which include gasoline, oil, tires, etc.; repair parts; purchase of new tools and equipment; garage (this is really depreciation on building); and transportation.

This budget is made up on a monthly basis and is submitted to the city comptroller, who then passes it on to the finance committee of the city council headed by Aubrey Milam, and to Mayor James L. Key for approval. The budget is revised in June and again in October when it is passed on for approval in the same manner.

Each month the city garage submits an itemized report of work done and charges made against each of the city departments for maintenance work on each department's equipment. This report shows the amount and cost of gasoline and oil charged to the departments as well as new tires, tire repairs, repair parts, labor, grease, anti-freeze, and other charges made.

In addition to his maintenance activities, which have over a period of years saved the city of Atlanta a considerable sum of money, Mr. Jett also writes specifications and makes recommendations for new automotive and other mechanical equipment required by the various city departments.

Prior to assuming his present duties as superintendent of the Motor Transport Department, Mr. Jett had charge of all machinery and automotive maintenance for the Coca-Cola Company, Atlanta. Outside of his work he has only one hobby—fishing in Florida whenever he gets the chance.

• TEN OF THESE IN THE FLEET . . . . . .

A complete list of the equipment maintained by this organization might be interesting to other fleet operators, so here it is, all sorted out for you by departments:

In the first place, the Construction Department of the City has 36 dump trucks, several jackhammers, air-compressors and 3 steam and 3 gasoline powered road rollers.

The Sanitary Department boasts 62 dump and garbage trucks and 10 street sweepers, as shown in one of the accompanying pictures.

Then there is the Police Department, with 4 trucks, 2 patrol wagons, and 34 squad cars; to say nothing of 26 motorcycles.

Nine trucks are operated by the Park Department.

The Prison Department has 3 trucks and one passenger car.

A hospital, called "Battle Hill Sanitarium," uses 3 trucks and one passenger car.

The Municipal Airport at Candler Field operates 2 trucks, 1 tractor, 1 grader and 1 portable air-compressor.

Another hospital (Grady Hospital) has 4 ambulances and one passenger car.

The Department of Health has 9 trucks and the Motor Transport Department has 2 more trucks.

One truck is used for Electrical maintenance (lights and signals) and both the Mayor and the Tax Assessor each have one passenger car that must be maintained by the City.

The Rock Quarry owned and operated by the City of Atlanta has 2 crushers, 2 steam engines, 2 steam boilers, 1 air-compressor and 1 steam drill.

As before stated, all of this diversified equipment is maintained by the Municipal Garage, under

(*Turn to page* 64)

One of two FWDs recently purchased by National Tea Company

LOAD *and* POWER *on the* front wheels make the FWD a SAFER truck

The front axle of the FWD is set back farther from the front end of the truck than is conventional practice . . . This was done for a purpose . . . It places more of the weight on the front axle . . . Since more weight is placed on this axle and since there is ALSO POWER on this axle, the driver has more control over the truck . . . There is not the danger of sluing or skidding on slippery or icy roads, or on curves . . . The front wheels of the FWD grip the road . . . This safety feature is of importance to you, not only in handling a liquid bulk load where the shifting of the load in the tank is a constant hazard, but also in the transporting of all heavy, bulky loads at the speed required today.

FACTS ABOUT FWD TRUCKS

Greater Safety. Front axles are set back. Power, as well as load on all four wheels, gives the FWD sure footing on slippery pavements, in congested traffic, and when going around curves.

Greater Dependability of Service. Reserve power, rugged construction throughout, and true application of the four-wheel drive principle, insure continuous operation under any condition. Backed by a nation-wide organization of parts depots and service men available at a moment's notice.

Faster Service. FWDs, with their powerful engines, wide range of gear ratios and four-wheel traction cut down trip time by being able to "make" the hills, curves, and poor going, faster than average trucks. No necessity for over-speeding on the straight stretches.

Wider Range of Operation. Four-wheel traction enables the FWD to handle its regular hauling job easily and do the tough jobs as a matter of course.

Operating Economy. Definite savings are made in gasoline, tire wear, maintenance cost, and other "out-of-pocket" expenses. This is the result of equal distribution of power and load and scientific four-wheel drive construction throughout.

BACKED BY AN INTERNATIONAL SERVICE SYSTEM

FWD TRUCKS

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

☐ The Snow Removal Problem ☐ Use of Extreme Pressure Lubricants ☐ Truck and Trailer Size and Weight Restrictions ☐ Effects of Front Wheel Stability on Public Safety ☐ Purdue University Efficiency Test ☐ Cutting Costs with the FWD Road Maintainer ☐ Making the Most of Controlled Power.

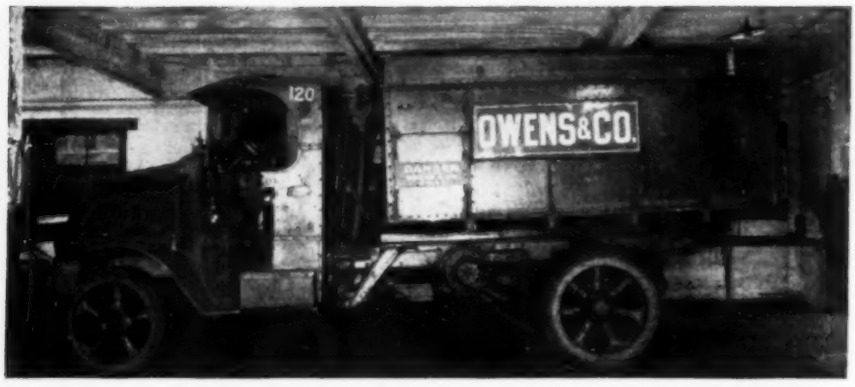
Mr. _____

Title _____

Address _____

City _____ State _____

Maintaining a 25-Vehicle Coal Fleet



By Carl Arnold,
Shop Foreman, Owens & Company, New York City

RECENTLY we gave our experiences with paint-removing and related how "appearance" is a factor in the Owens & Company coal delivery fleet. Now your Editor has asked us to tell something about our maintenance procedure.

We operate a fleet of 19 coal trucks, 4 salesmen's cars and 2 pick-ups. In the summer our maintenance is somewhat simplified, as there are no peak delivery periods and we can keep a truck in the shop as long as necessary. In the winter, on the other hand, it's more difficult, as the trucks are always on the go and can hardly be spared from service.

On account of the fact that we do not have a large number of vehicles, and because our operation is confined to a rather small area, we do not have any special maintenance problem. The truck fleet at present consists of the following: five 7½-ton AC Macks, five 6-ton Pierce Arrows, seven 3-ton Autocars, and two 3½ to 5-ton Autocars. The average age of these trucks is about twelve years—one of them being a 1921 model. We also operate four salesmen's cars and two pick-up jobs for service work. Washing is done as needed, according to the weather conditions.

DRIVERS DAILY REPORT

Truck No...... .....**19**
Gas Received.....**gals.**
Oil Received.....**qts.**
Mileage.....
Car Condition.....
.....
.....
.....
.....
Signed.....
CHAUFFEUR
Job Completed.....**19**....
SIGNED .....

This Drivers' Daily Report form is a multiple-purpose one, as it serves as a check on gas and oil, mechanical difficulties, and their repair and check-up by the mechanics and foreman. It is the only one used in the shop.

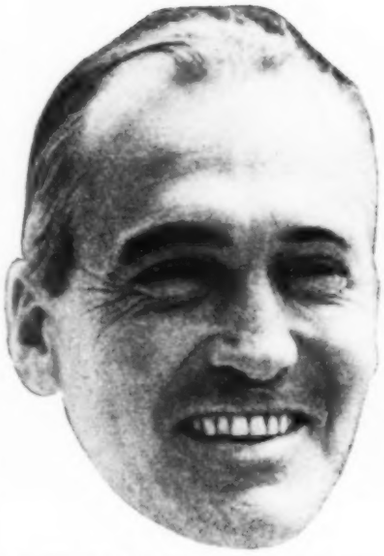
Since the maintenance of this fleet is not a complex job, we have eliminated a lot of time-consuming "red-tape" and by constant supervision and frequent check-up, are able to produce a satisfactory operation. For example, we do not have any particular season for "major repairs," as the trucks are run until these repairs are absolutely necessary. Engine condition is judged largely by "pulling power" and oil consumption, and we make sure that the motor overhaul is done before the motor becomes an "oil hog."

While on the subject of oil, we might state that we used to change oil on a mileage basis—every 500 miles. We have recently decided to use colloidal graphite mixed with our oil, and find that this will enable us to run on our oil for as much as 1,500 miles. We believe that colloidal graphite provides a certain "cushioning" effect, that it fills up the microscopic pores in the shafts and bearings, and that it provides a finer sort of adjunct lubrication, in addition to preventing the formation of *some* carbon. As to whether it will be the means of "saving" a bearing, if the engine should be run without oil, we have not tried that as yet, but we *do* believe that it builds up a "film" on all working parts and makes for quieter and more satisfactory operation.

We have never considered reclaiming our oil, inasmuch as our old crankcase oil is used in our coal pockets, for lubricating conveyor chains, sprockets, shafting, etc. Then too, we use it in the shop, for greasing truck springs, in which case it is "painted" on with an old paint brush.

There are many operators who do not believe in greasing truck springs, according to a recent issue of FLEET OWNER. Permit us to say that we have only had two broken springs during the entire winter

(*Please turn to page* 61)



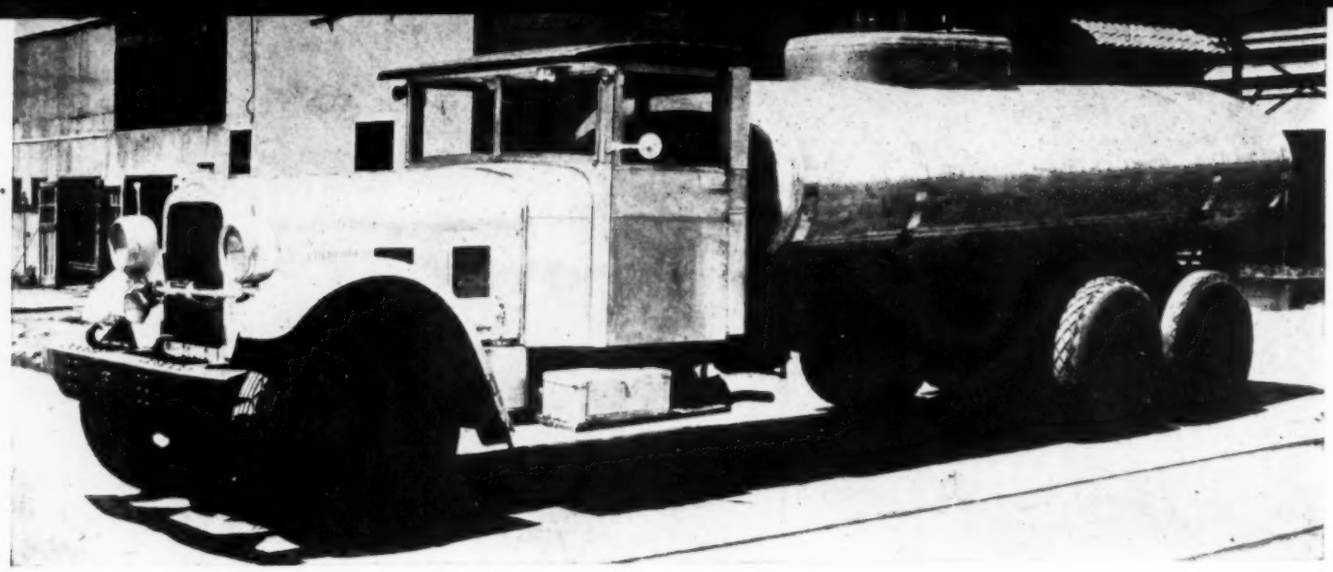
"Now I know why so many FLEET OWNERS are changing to FORDS"

"I READ that Ford dealers were inviting responsible truck owners to make their own tests of the 1935 Ford V-8 Trucks and Commercial Cars. I called a Ford dealer and asked for an 'on-the-job' test . . . with my own loads, over my own routes . . . and now I know why so many operators are changing to Fords.

"It didn't take me long to discover that I've been 'spotting' my competitors who use Ford V-8's too many important advantages. In the first place, I've been trying to buck V-8 Performance. In the second place, I've been up against V-8 Economy. And in the third place, while I've been footing big repair bills, they have been enjoying V-8 Reliability and the advantages of Ford's Low-cost Engine Exchange Plan and other parts exchange privileges.

"That 'on-the-job' test showed me how to save TIME and save MONEY. I'm not spotting ANYbody ANYthing any more. And if you are competing with V-8 owners too . . . take my advice and quit trying to BUCK them. Change over to Fords . . . like I did . . . and give them, and all the rest of your competitors, a run for their money!"

FORD V-8 TRUCKS AND COMMERCIAL CARS



« The Basic Principles

THIS article deals with the problems of large, company-owned fleets. . . . Mr. Preble has analyzed the whole proposition, from cotter-pins to ten-wheelers. . . . The S. A. E. had the privilege of hearing this address at a recent meeting. . . . You have the opportunity of reading it here in highly condensed form.—H. C. F.

IN large operations we find a separate and distinct organization, commonly referred to as the "Automotive Department," the functions of which invariably include the selection, retirement, allocation, maintenance and whenever practicable, at least technical supervision over the operation of vehicles.

All of these factors are important links in the same chain, and in order that these functions may be satisfactorily coordinated, adequate authority and responsibility must be granted to the transportation executive.

For many reasons, an ideal motor transportation set-up cannot be installed hastily; but such an ideal program should be planned for and used with such modifications as may become necessary, as a goal toward which to work. This goal should be thoroughly understood and "sold" to the organization.

Clear and explicit definition must be made of the responsibilites, relationships and authorities of all concerned.

Central control must prescribe and codify the rules under which motor transportation in all branches and subsidiaries should operate; that is, the rules by which the actual operating personnel must be guided. To the supervisor of motor equipment must be delegated ample authority to carry out these responsibilities. Each subsidiary unit should be notified as to its exact status and full cooperation should be requested.

Efficient Use of Equipment: I recognize, in suggesting the setting up of an operating ideal, or pattern, to work toward, as a preliminary to considerations of what to buy, that certain types of business are confronted with so many unpredictable conditions as to make any "ideal" set-up highly theoretical, and relatively useless. I recognize, too, that in practically all businesses we must shoot at a moving target.

I do believe, however, that many concerns having transportation operations of a relatively fixed and constant nature, will benefit from the process of analyzing their highway transport activities in each territory or route from a standpoint of assuming the necessity of purchasing a complete new set of equipment. In effect, it is a process of asking oneself "If, for some reason, I suddenly found myself without any equipment whatsoever in this territory or route, just what would I buy, and why?"

The subject is too involved for lengthy treatment here, but I strongly recommend studies such as the following as being fundamental to the question of "What to Buy?"

1. Studies of volume of merchandise or work to be handled, including trends, seasonal variations and "load factor."

2. Studies of the potential "work factor" of modern motor truck equipment. Such analysis should include statistical knowledge of average running speeds, loading time, unloading time and maximum possible work period per day.

3. The setting up of the minimum amount of the proper size and type of equipment which will handle the job to be done with the lowest possible consumption of mileage and time.

If it goes without saying that the most efficient use of existing equipment must be secured before making the decision to purchase, it should also be self-evident that the collection and tabulation of experience data is indispensable; not only the usual cost-accounting data but also facts relative to operation.

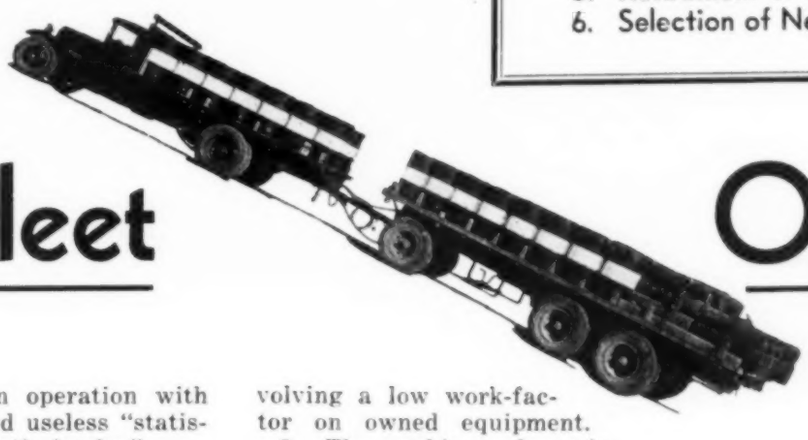
I want to make the point that whereas there are obvious limitations to the amount of desirable data to collect and maintain, dependent upon the size of the company and the number of its vehicles; and whereas sometimes we find instances of owners maintaining large numbers of interesting but useless records, nevertheless in many instances wholly inadequate records are kept.

As long as each record can be proven to be genuinely useful in the reduction of cost in terms of product hauled or work performed, there need be no fear of clut-

By T. L. Preble,
Supervisor of Automotive Equipment,
Tide Water Oil Company,
New York City.

THESE factors, says Mr. Preble, must be considered in any study of the Basic Principles of Fleet Operation:

1. Organization and Control
2. Effective Use of Equipment
3. Maintenance
4. Cost Accounting
5. Retirement of Old Equipment
6. Selection of New Equipment



# of Fleet Operation

tering up an operation with irrelevant and useless "statistics for statistics' sake."

The following fundamentals are deserving of more attention than they have received. Proper attention to them will in many companies secure a much greater factor of intensity of use and therefore a lower cost per mile run and per unit of product hauled:

1. The districting of vehicles by make where scattered fleets are involved. To such degree as this can be accomplished results will be obviously beneficial.

2. The use of contract or common carriers where adequate service can be obtained at lower cost. This particularly applies to operations of a temporary nature and to certain types of operations involving a low work-factor on owned equipment.

3. The making of equipment alterations, where feasible, which will broaden the usage of the vehicle.

4. The calculation of seasonal requirements in order that the shifting of equipment may be planned to best advantage.

5. Routing and scheduling. Usually, proper routing is a process of allocating work to a vehicle with the object of obtaining (a) a maximum of deliveries (or work) per hour and per mile run; (b) a maximum number of productive hours work per day; (c) as even a daily flow of work as is possible; (d) flexibility of assignment in order that emergencies may be properly taken care of. As a preliminary to actual assignment to a route the vehicles' average running speeds in the area involved should be predetermined, and average loading and unloading times estimated.

6. Sound driver policies. Rapid studies have been made, especially in some of the larger fleets in this vital matter of the selection, training and control of drivers Much remains to be accomplished, however, especially on the part of smaller owners of truck equipment. The importance of the driver, not only in respect to safety, economy, and all-around trucking efficiency but also in respect to the attitude of the public toward the owner, and trucks in general, cannot be over-emphasized.

7. Studies of methods of speeding up loading and unloading are of obvious importance, but can only be mentioned here as deserving the constant attention of all truck owners large and small. Analysis of this problem has produced surprising results to many an operator.

8. The same thing is true in respect to the problem of efficient allocation of trucks. The fleet operator's objective must even be that of extracting the last ounce of economical work from a minimum number of properly sized and properly allocated vehicles. At the same time he must give service.

Maintenance: There are still those who say that night servicing can't be done successfully. But it is contributing successfully and substantially to many a fleet, and to many small operators as well. Night service need not be limited solely to operators using their own maintenance facilities and personnel.

It is difficult to understand the reason

(*Please turn to page* 26)

why the principles and practices of genuinely preventive maintenance have not received unanimous recognition. Direct costs and time-out-of-service costs are lowered by preventive maintenance.

Other factors of importance include equipment, facilities and methods, self versus outside maintenance, appearance, unit replacement, and inspection and control.

Retirement of Old Equipment: At the present time it seems to me that there is no substitute for sound judgment, based not only upon factors of obsolescence, fixed and variable costs and trade-in valuations, but also upon considerations of profitable application in terms of the factors of usage discussed previously in this paper.

Whereas I realize that size of fleet, matters of expediency, and factors of purchasing policy have a bearing on the question, I believe that operators will in many cases, do well to revise their practice of "buying in large chunks." Can 100 vehicles wear out and become null and void all on the same identical day? It seems to me that the conception of a fairly even flow of mileage, into and out of the fleet is more in keeping with the extraction of all of the profitable mileage of each vehicle.

Furthermore the above process of buying eliminates recurring peak loads of preparation for purchase, of preparation for operation after delivery from purveyors, and peak loads of financing.

Selection of New Equipment: The creation of standards upon which to base purchases is of course highly important. Here again is an item which can easily be under done or over done.

I am not in agreement with such few operators as evince a desire to completely re-design a truck before they will buy it. After all, designing engineers have families to support.

If, however, based on specific and ample experience data, a given design detail can be proven by the operator to need attention, no one is to blame but the manufacturer if the purchaser specifies alteration.

I believe that the operator will benefit if he will work toward standardization along the following lines:

1. By means of operation studies determine job standards, and translate such standards into sizes of vehicles. (Needless to say State Laws will force many a compromise).

2. Plan for interchangeability of bodies (and sometimes other equipment) as far as possible. Thus, for a given size he should insist upon a given CA dimension and frame length.

3. Set close tolerance on such items as weight distribution, effective brake lining area, road speed, ability, net chassis and body weights, and axle capacities.

4. Consider price class, based on types, sizes and jobs of vehicles. Accurate cost accounting is of obvious importance in this connection, including a mileage basis of depreciation which, however, should also possess time limitations, and be subject therefore to adjustment when desirable.

5. Standardize on the same tire sizes for a given truck capacity, and upon type of rims.

6. Standardize (after analysis of experience data) on accessories, such as booster brakes, air and oil cleaners, lubrication fittings and the like. This will be particularly helpful to maintenance personnel.

7. Give careful attention to fine appearance of equipment, and to as much uniformity of style and of coloring as conditions will permit. The most favorable reaction of the operators' own organization and of the public is an objective well worth striving for.

One of the most important details involved in the actual process of purchasing a truck is that of the necessity of furnishing the seller with a clear cut and definite statement of conditions to be met.

I believe that the buyer should, after proper analysis of all factors, create an "approved list" of makes. This list should naturally be subject to reasonable modification, but will furnish a basis of standardization. Normally I believe standardization upon one make to be an unsound practice from the operator's standpoint. By the same token a complete "open door" policy is so obviously unsound as to merit no discussion.

The buyer should, in particular, become fully alert to the effect of faster average speeds and give full consideration to engine speed, torque, and gear ratios both in transmission and rear end. And of necessity, he should give greater attention than ever to adequacy of brakes.

(*Please turn to page* 64)

The fleet, whose vehicles in part are shown in this picture, is a splendid example of what is meant by a "decentralized" fleet. In large operations such as this one, we usually find the "Automotive Department" about which Mr. Preble writes. . . . Smaller operators, however, will find much to interest them in the foregoing article covering the basic principles of fleet operation.—The Editor.

Triple Protected TRUCK TIRES

SPECIAL JUNE VALUES

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CASH IN NOW ON SAVINGS OF NEW GOODRICH TIRE INVENTION

This is economy month for truck owners! You can slash your tire costs by buying guaranteed Goodrich Silvertowns now. These tires are Triple Protected in the sidewall—the weak spot in most truck tires. Triple Protection actually checks 80% of premature failures—helps you to reduce delays—avoid accidents—cut costs way down!

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This month you can get more tire for less money. Every Triple Protected Silvertown costs *more* to manufacture. But you don't have to pay one cent extra for this amazing invention. And it may save you hundreds of dollars!

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1 A layer of tough **PLY-FLEX** distributes stresses—prevents ply separation—checks local weakness.

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COMMANDER
$16.79
30 x 5 H.D.—8 Ply
OTHER SIZES PROPORTIONATELY LOW
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LOOK AT THESE JUNE $$ SAVERS!

NOW SUPER TRACTION FOR TOUGH GOING

Built for mud, clay and gumbo, the Super-Traction Silvertown will always get you out. It's a hard-hitting husky with lug-type, self-cleaning tread. It's Triple Protected! See your Goodrich dealer for low prices.

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No more leaks around the valve base with the Goodrich Heavy Duty Black Tube! The valve stem is cured to the pad—the pad to the tube. Actually one-piece construction. Priced to save you real money.

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Let your wheelbarrows ride on air. New Goodrich tires make wheelbarrows roll easier—reduce breakage. Will not damage lawns. We furnish wheels and tires. Another June value!

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Goodrich has a tire for every hauling need. Tires built and priced to meet and beat all competition. Every one backed by Goodrich—America's oldest tire manufacturer. Get prices now on your summer requirements.

FREE! BIG 44-PAGE TRUCKER'S HANDBOOK

Every trucker, every driver should have a copy of this useful handbook. Gives commodity weights, load schedules, inflation tables, truck and tire data. See your dealer or write Dept. T-62, The B. F. Goodrich Co., Akron, Ohio.

Goodrich *Triple Protected* Silvertowns

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

It's Here!--An "Appearance-Yardstick"

By A Transportation Executive

(Name and Company Withheld by Special Request)

How to Make An Analysis of the "Appearance-Maintenance" Condition of Any Fleet — Something Never Before Attempted:

"QUANTITATIVE and Qualitative Analysis of the Painted Condition of a Fleet." Such is the title of an impromptu talk, made before a recent S.A.E. meeting by one of the most prominent transportation executives in the country. However, don't let this lengthy title scare you. The talk tells, in simple language, just how you can really determine the condition of the finish of *any* fleet of automotive vehicles, without having to depend on *opinions*, very few of which will agree. Here's the whole story, boiled down into a few simple paragraphs. We hope you can use it.

HOW'S the paint-condition of this truck? The driver, who is responsible for its condition when on the road, would probably say "swell". The maintenance superintendent might think it was "fair". And the "big boss" might voice the opinion that it looks "lousy". Who is correct and can you prove it? You can, if you follow the simple advice given in this article. Incidentally, the truck shown in the picture does NOT belong to the man who wrote this article. We just put it in to make it hard for you to determine his identity, as he requested that the authorship be kept anonymous.—Editor.

"Appearance-maintenance, it goes without saying, is an important item in the operation of practically all fleets and one of the problems facing fleet operators it would seem, is the lack of a suitable 'yardstick' for making a quantitative and qualitative analysis of the appearance (or paint condition) of their vehicles, without having to resort to opinions of various individuals.

"Here is one answer to this problem. Locate, borrow, beg or steal, say 10 different metal panels of the same finish and color as used on the vehicles. 'Weather' these panels progressively from new to complete deterioration. On the first panel will be new paint, one half of it polished with wax. The next panel should simulate somewhere around 6 months' service and be divided into three parts—one part left 'as is,' one part simply washed; and the third portion washed and polished. The third panel will similarly simulate 12 months' service and the remaining panels should be similarly weathered, as far as necessary to reach failure of finish.

"Next rig up a daylight bulb lamp extension with reflector, to secure a constant quality of light. This is absolutely necessary for correct comparison, inasmuch as differing light in garages, or differing light of the sun outdoors, will give a fluctuating perspective of painted surfaces. Using the daylight lamp, lay the panels on the hood of a vehicle and ascertain just which portion of one of the panels matches the finish of the hood. Then match a panel to the vertical surface of the body. Note checking, chalking, flaking, etc.

"Each third portion of the sample panels should be numbered consecutively, for ease in tabulating. Record the numbers of the panels for each vehicle and you will have an accurate record of practically the exact painted condition of the vehicles as of that date.

"It is unnecessary in a large fleet to measure every vehicle. Simply pick vehicles here and there, according to the "rules of sampling," to secure a "cross section" of the fleet.

"To determine the effect of a solvent-cleaner program, clean a six-inch circle on the hood and again tabulate the panel number.

"During the survey, look at the tops of the panel-bodied vehicles. Fabric tops usually require dressing oftener than the metal-and-wood surfaces require painting. Note the condition for each vehicle.

"Look at the chasses for mud and grease accumulation. Make a scratch with a screw-driver across the front wheel brake plate and tabulate depth in sixteenths of an inch. Look at the condition of the wheels as to cleanliness, chipping of paint, etc.

"Look at the engine for cleanliness, at the interior of the bodies for arrangement of materials, etc. Examine the upholstery for tears, the floor mats for dangerous conditions, etc., etc., and you will have a rather complete picture on your tabulating sheet.

"When you get back in the office, analyze these data from an appearance-maintenance standpoint. There is no guessing and no 'judgment' mixed in.

(*Please turn to page* 64)

in TIMKEN and WISCONSIN FULL FLOATING AXLES

Widely spaced bearings, at wheels and differentials, do their vital bit in making Timken and Wisconsin Full Floating Axles the business-like, low cost equipment which they most emphatically are.

Rigidity is inherent in Timken and Wisconsin design. These bearings have tremendous capacity for combined radial and thrust load. Correct adjustment is simple.

Add to this the proved superiority of Timken's "Torsion-Flow Axle Shaft" and you have the essentials of a full-floating axle that will deliver sturdy, trouble-free service. "Torsion-Flow" begins in the forging. The grain of the steel (illustrated) is such that the flange cannot "pop off." The shaft is so proportioned that twisting strains are evenly distributed throughout the entire length. There can be no accumulation of local stresses to cause breaks. Shock loads are cushioned.

In proper design, correct materials, and Timken and Wisconsin workmanship these axles are built to meet the demands of exhaustive practical experience in operating vehicles *for profit.*

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« SYNTHETIC

THE • NEW • TREND • IN

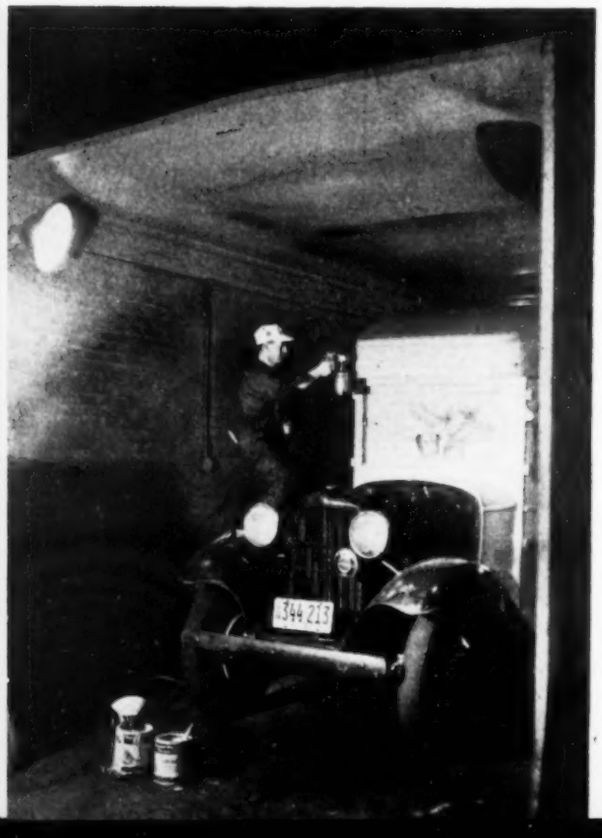
THIS article is not Sensational. . . . It's not even "News". . . . Most of you know what it's all about. . . . But it discusses the subject so well, that all fleet men will learn something by reading it. . . . And because it's written by a manufacturer, don't get the impression that it's a "blurb". . . . Read it and be convinced!—H. C. F.

SINCE their introduction about ten years ago, pyroxylin lacquers have become accepted practically 100 per cent throughout the automotive industry, as the standard finish for passenger cars. Not until 1934 was there a departure from this practice, when the Ford Motor Company became the first of the car manufacturers to use a baked finish of "synthetic" enamel.

However, these so-called "synthetic" finishes had already completely met the requirements and approval of fleet owners and operators of commercial vehicles prior to 1934. Because they had been found to possess greater flexibility, better gloss-retention, increased covering-capacity, presented a better surface for repainting because of controlled chalking, and were quicker drying, they already had supplemented oil or varnish enamels.

Perhaps we should make some explanation of the common designation of "synthetic finishes." Generally speaking, "synthetic" signifies that it has been made or manufactured artificially, in contrast with coming from Mother Earth.

Prior to the chemical evolution of synthetic resins as we know them today, all the gums that were used in the formulation of paints, varnishes, and lacquers, were what were known as fossil gums, representing the saps of various trees that are usually found in the Far East, and then imported to this country. They served the purpose very well, but we were not always sure of uniformity and certain other desirable characteristics.



During the past few years the technicians of our laboratories learned how to make better gums than Mother Earth had ever given us. There are literally thousands of various synthetic resins, and certain gums have very desirable characteristics.

While synthetic resins promise to revolutionize paint practices, it does not necessarily follow that because a paint film contains a synthetic resin it is any better. The results are all dependent upon the scientific selection and blending of the synthetic compounds that produce the most desirable results.

Synthetic enamels have become completely accepted in the commercial body finishing field. It was found that many shops directly concerned with the repainting of commercial vehicles could use this type of finish without difficulty in connection with many of their operations. The shops that happened to have an old varnish room or some other room that was dust-free, with good ventilation, found out they could turn out equipment at a considerable saving in both labor and material, because of synthetic's higher natural gloss which required less sanding and polishing and because of its better filling and greater covering, which reduced the material cost per job.

It was found that these synthetic enamels were ideal for refinishing wooden and metal wheels. They had the flexibility required, and the high sharp gloss desired. In fact, many shops found that the better air-drying synthetics available gave them a much better gloss on wheels than the original factory jobs, due to the fact that in baking synthetics at a temperature of 200 to 250 deg., some gloss was lost.

Many fleet painters were quick to learn that they could in many cases apply these synthetic enamels directly over the old finish without the necessity of undercoats because synthetic enamels have greater adhesion than any other type of enamel. Many found that because of synthetic's exceptional covering capacity, they could cover solid in one coat, even in a brush application. Some did all spray work; others all brush work;

ENAMELS »
AUTOMOTIVE • FINISHES

By E. W. Windsor,
The Sherwin-Williams Company, Cleveland, Ohio

and others sprayed the body and brushed in the fenders where they were required to do two-tone work, and by such a plan eliminated the necessity of masking.

Thus it is necessary for every one concerned, directly or indirectly with the refinishing of motor vehicles, to become conversant with the use and handling of the new synthetic finishes. There are several factors of importance in connection with their application that we feel are particularly worth mentioning here.

In the first place, there is a difference in technique in the spray application of synthetics as compared with lacquer. In spraying lacquer, we have learned to hold the gun at a distance of from six to eight inches from the surface being sprayed. With synthetics, the gun should be held back further from the work—say ten to twelve inches—from the panels. Otherwise unnecessary orange peel, sags, runs, and wrinkles may occur.

An especially designed synthetic nozzle should be used for the very best results, this having larger air-ports than the regular lacquer nozzle, as more air is required to properly break up and atomize synthetic finishes. This means also that the air pressure should be increased. If you are accustomed to spraying lacquer with a cup gun at around 50 to 60 lbs., you will want to increase the air pressure in spraying synthetics to 70 or 80 lbs.

Various manufacturers have specific instructions for reduction, depending upon the solid content of the material, and we urge you to follow their instructions. There are, however, many operators who are turning out beautiful work that looks like porcelain, without any evidence of orange peel, by reducing synthetic enamels as much as 35 to 40%. They have found that light coats are much preferable to heavy coats—not only as far as adhesion and cohesion of coats is concerned, but evenness and uniformity of finish as well.

Because synthetics do not surface-dry almost immediately following their application like lacquers do, greater care must be employed to insure a clean shop. If you do not have a dust-proof room, then at least partition it off from the rest of the shop, if by nothing more than tarpaulins, to keep the dust from blowing into the paint shop and the spray dust carrying out into the open shop where other cars may be parked.

While there is less spray dust with synthetic enamels than lacquer, what spray dust there is, is wetter, and if it should float over on other cars it probably will hold fast and cannot be easily and quickly rubbed off with a dry cloth like lacquer, but probably will require compounding to remove. Also, wash down the rafters and side walls regularly to prevent the accumulation of dust which will fall into the work as a result of any little vibration of the building.

Learn to use a tack rag. These you can make yourself by dipping cheese cloth into spar varnish and allowing it to dry until it just begins to get tacky. Or you may purchase these all prepared ready for use. The object of the tack rag is of course to remove the dust or dirt that may fall into the top of the film between color coats.

The so-called synthetic finishes dry almost entirely through the process of oxidation, in comparison with lacquer, which dries wholly by evaporation of the solvents. Thus, when lacquer dries there is no chemical change, but with synthetic there is a chemical evolution—a combining with the oxygen in the air. This will also

explain in a measure why synthetic finishes are more resistant to gasoline, oil, alkali, and acid solutions than almost any other type of enamel.

The initial drying period of most synthetics, however, in setting up dust-free, takes place within the first two hours through evaporation of certain solvents, and it is for this reason that most manufacturers recommend recoating any time within 1½ or 2 hours. Where it is not possible to apply the subsequent coat of synthetic enamel within 2 hours, then 12 hours or an overnight drying period should be allowed; otherwise raising is likely to occur because the solvents in the second coat would likely attack the oxidizing oils of the first coat.

The majority of operators apply synthetic enamels as a continuous operation. Supposing they start at the front of the vehicle; by the time they have sprayed all around the job they are ready to go around the job again the second time.

Generally speaking, two coats of synthetic enamel are sufficient but the first one should be a light semi-transparent coat to insure quicker set-up and better adhesion to the surface, and the second coat should then be a full wet coat. If the first coat is applied too heavily, there is a very good possibility that sags and curtains will develop in double coating, also increase the amount of orange peel, and on damp humid days will probably result in wrinkling.

Synthetic finishes dry from the top of the film down, rather than from the bottom up; and therefore it may seem that the film is actually drier than it really is. Masking should not be attempted without at least a full overnight drying period under normal drying conditions. This means that the temperature should be 70 deg. F. and more, where there is abnormal humidity in the atmosphere, or where the coats are applied too heavily, or where there is not good circulation of air through the shop, or where there are drafts blowing directly on the job.

To make sure that the masking tape or paper does not stick too tight to the top of the film it is often good practice to lightly pounce with chalk before setting the masking tape or paper in place.

Generally speaking, no attempt should be made to rub with compound any synthetic enamel without allowing at least 48 hours drying time or longer. In fact, several days is sometimes required for the film to become thoroughly hard. If it is rubbed before the film is thoroughly hard, a roughness of finish may be encountered, and it will be difficult to obtain a good rubbed effect. Under such conditions the enamel will have a relatively poor gloss retention. Where a rubbed effect is required the day following the application of the last coat, the best procedure is to use a good *liquid* lacquer polish.

Occasionally it may be desirable for synthetic enamels to dry with a semi-gloss rather than a high sharp gloss and this may be done where desired by allowing the enamel to stand for several hours with the cover off, so that the material has an opportunity to oxidize somewhat. Of course, all synthetic enamels should be thoroughly stirred and carefully strained before use, to prevent as far as possible the introduction of any dust or dirt that may dry in the final finish.

The question is often asked as to whether or not lacquer thinners can be safely employed for reducing synthetic enamels. While they are entirely soluble, their use more or less represents an economical waste, because the cotton solvents incorporated into a lacquer thinner are not necessary in a synthetic reducer. That accounts for the difference in cost. Furthermore, the use of a lacquer thinner for reducing synthetic enamels is likely to cause raising of the film underneath—the only exception being where synthetic enamels are being applied directly over an old lacquer finish. In this case slightly better penetration and adhesion is obtained where synthetic enamels are reduced to spraying consistency with a good slow drying lacquer thinner.

We cannot urge you too strongly to use the reducers recommended by the manufacturer of the synthetic finishes you are using in your shop, to avoid unnecessary troubles and to secure the very best finished effects. It should also be remembered that the thinner should be added to the enamel gradually, rather than by "dumping" it in.

Because synthetic enamels cannot be successfully touched up or spot-repaired like lacquer, both the production and custom shops have found it necessary to respray the entire panel. The only way that such a procedure can be eliminated is through the medium of a portable baking lamp, of which there are one or two promising ones on the market today, which will quickly radiate a temperature as high as 250 deg. at a designated spot, softening up the original baked synthetic enamel finish and causing the new material to weld in perfectly with the old.

While synthetic finishes do not require as much sanding because of their better filling and build-

(Please turn to page 34)

A CERTAIN amount of hand-sanding will always have to be done. Since "labor" is the larger item of expense in this operation, fleet men would do well to insist on the best sand-paper that money can buy. Modern sand-papers cut easier, work faster and last longer. . . . If you are still struggling along with the "old-fashioned" kind, there's a real treat in store for you. Your paint supplier should carry the new type in stock.—H. C. F.

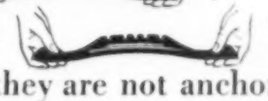
YES, MR. FLEET OPERATOR

it is easy to see why

GENERAL TRUCK TIRES

are STRONGER than other Truck Tires

Suppose you had two posts anchored in the ground like this and a rope made of ten cords stretched between them to withstand a strain like this then suppose you wanted to make the rope stronger and you took two short lengths of cord and laid them on the rope like this Would you add any strength to the rope? . . . Of course not! . . . BUT, suppose you added two full lengths of cord and tied them firmly to each post like this You can see for yourself you would add 20% to the strength of the rope.

It is the same way with truck tires. The steel-wire beads are anchorages like those posts. The compressed air inside is trying to tear through the fabric just like the hand shown above. If you take an ordinary tire and stretch it out like the rope you see it has two narrow, floating "breaker strips" like this  These loose layers of fabric cannot add strength because they are not anchored to the beads. Now take a 32x6 General and pull it out like the rope. You see that these two additional, full-width plies are anchored from bead to bead. Because they are anchored they increase the total strength of the tire to withstand road shock and carry the load. Only the General construction* can add this strength. That's why Generals are stronger tires . . . and that's why they give you more miles for your money.

* The construction of the General Tire is patented and cannot be duplicated by others.

GENERAL BUILDS the most complete, most highly specialized line of truck tires in the business. GENERAL TIRE DEALERS are factory-trained truck tire experts with wide experience and accurate knowledge in fitting the right type and size of tire to every kind of job. THIS COMBINATION is worth real money to you. If your job is tough, call in the General Tire dealer and let him prove these statements.

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this valuable booklet on how to get more service from your truck tires. Write to The General Tire & Rubber Company, Akron, O.

ing qualities, nevertheless it is worth noting that the finer grades of sandpaper should be used, as coarser grits and too much "elbow grease" is certain to result in sanding scratches that will show through the final finish and become magnified by the high natural gloss of the enamel.

Wherever it becomes necessary to coat either galvanized iron or galvannealed metals, a special primer must be employed to insure a satisfactory bond over a period of time on outside exposure. Some operators favor a specially formulated zinc primer, which will weld itself to the zinc coating on the metal and prevent the powdering of the zinc dust that takes place where the usual type of oil primer is used. Other operators prefer chemical treatment of the zinc coating, before painting.

Wherever blues or reds are used, their life can be extended considerably through the use of the correct synthetic finishing clear. In fact the right kind of a clear will add several months durability to any color, but particularly the reds, blues and light tints. The only case where a clear should not be used is over white, as this will cause the white to yellow on exposure, whereas the white without the clear should be self-cleansing because of its gradual chalking.

The clear, however, should be applied within 48 hours after the application of the last coat of color, under normal drying conditions. In other words, do not permit the enamel to become too hard, otherwise the maximum bond between the enamel and clear cannot be obtained.

We have devoted this discussion to the use and application of the so-called synthetic finishes because they are newer, less is known about them, and they are generally of more interest because new technique in their application is required. The trade's acceptance of synthetics and their ever-increasing use naturally brings up the question as to whether or not they will ultimately replace the use of lacquer in the motor car production, fleet and custom shops. We do not believe they will, at least for several years to come.

It is very probable that the "big three" motor car manufacturers will adopt baked synthetics as a standard production finish, but we do not believe that the other manufacturers, with a smaller output will make this change. Any saving in labor or material costs compared with lacquer would not be worthwhile against a limited production. It means a capital investment in new progressive tunnel baking ovens, air conditioning, etc. Furthermore, it is yet to be proven that synthetic enamels have any better or longer durability on outside exposure than properly formulated pyroxylin lacquers.

We believe that the ultimate finish will be a combination of lacquer and synthetic, combining the advantages of each, without the disadvantages of either. These are already beginning to appear on the market.

In concluding this subject, let us pause briefly to review the "high lights" of automotive finishing practices during the 30 year era of the automobile industry, so that we may have a better appreciation of our position today as a result of the progress that has been made.

It was only natural that the automotive pioneers followed the finishing practices and systems that had been employed on horse-drawn carriages. In those days painting was both an art and a science. The master painter was required to be a formulator, a mechanic and an artist. He had to know how to properly combine raw materials, how to apply these expertly, and be able to carry out the finishing touches of striping, lettering, etc. Each man had carefully-guarded secrets that he had learned as a result of a long apprenticeship. There was practically no help given these men by the paint manufacturers.

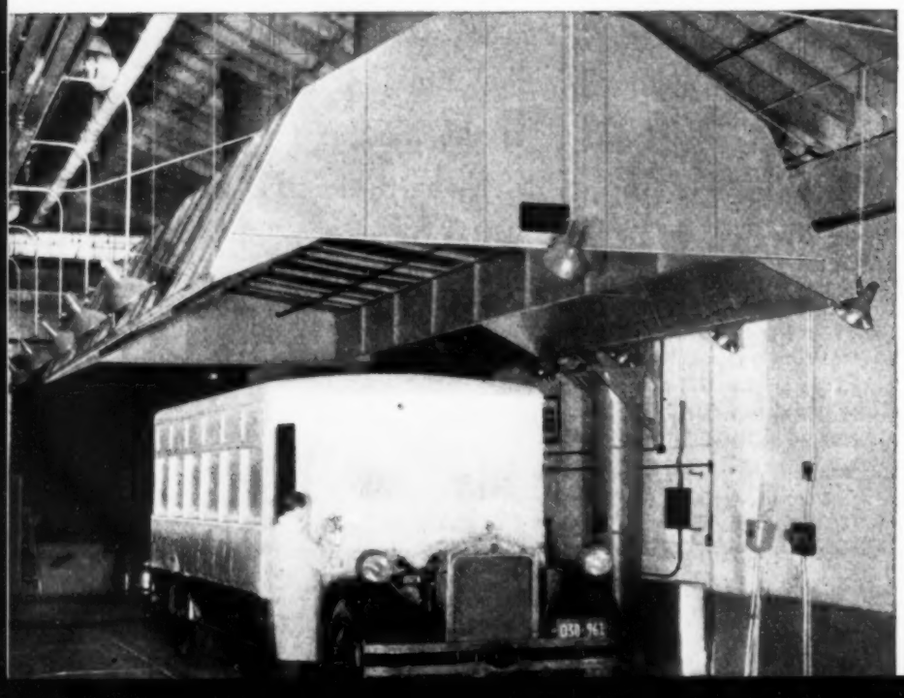
Contrast that condition with today. We gather together time and again for an open and frank discussion of our problems, giving each other the benefit of the knowledge and experience that each of us may have gained individually, but which we can all use collectively.

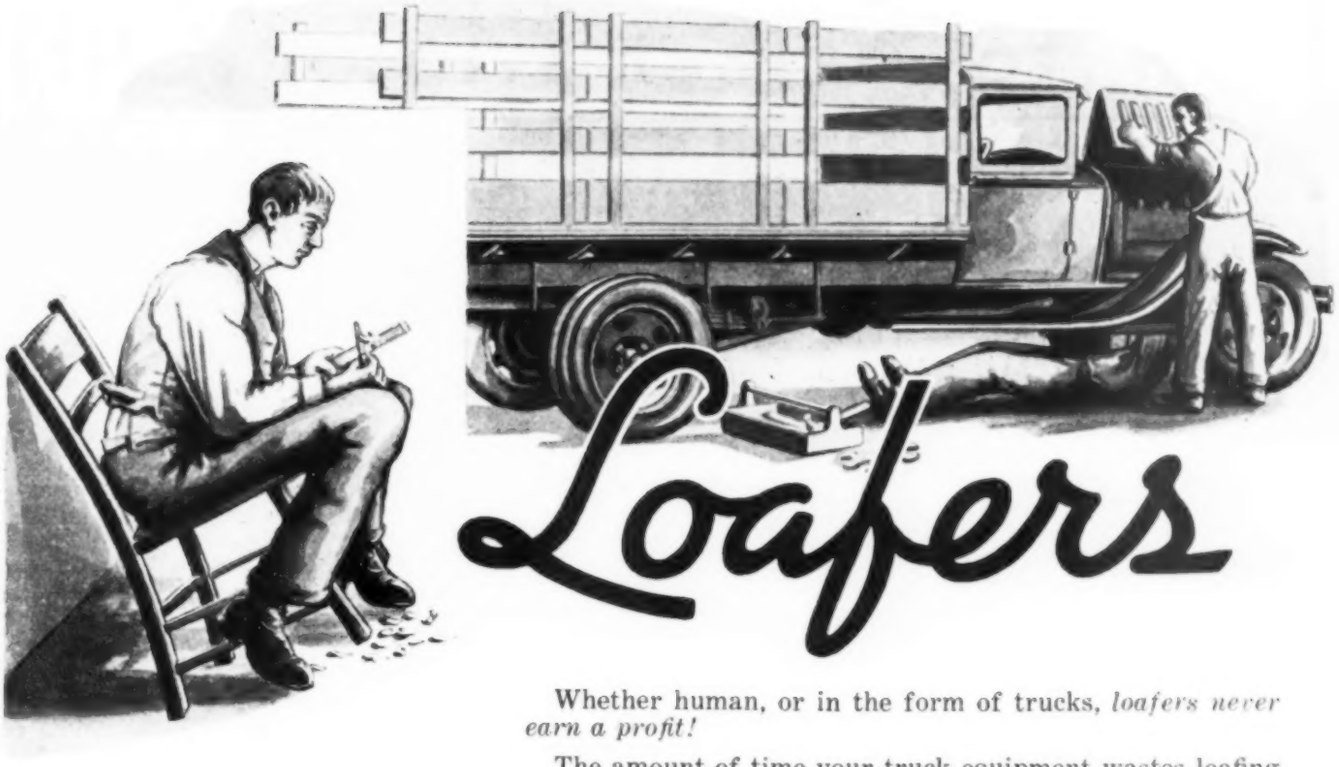
As the automotive industry developed and production facilities increased, it was soon found that the finishing department was the "bottle neck" of the production program because of the long time required in the application and drying of the color varnishes, rubbing varnishes, etc. The problem of eliminating the "bottle neck" by drastically reducing finishing time was presented to two or three of the larger and more progressive paint manufacturers. Their chemists and technical men finally solved it with the introduction of pyroxylin or nitrocellulose lacquer finishes.

This was only ten years ago, and the development work in the refine-

(Please turn to page 61)

HERE'S a picture of what is considered modern spray-finishing equipment. However, the size of some fleets does not warrant such a complete installation, but suitable facilities can be obtained for even the smallest sized fleets.... Since this is your Editor's favorite subject, he'll be glad to discuss your spray-painting equipment problems with you.—H. C. F.

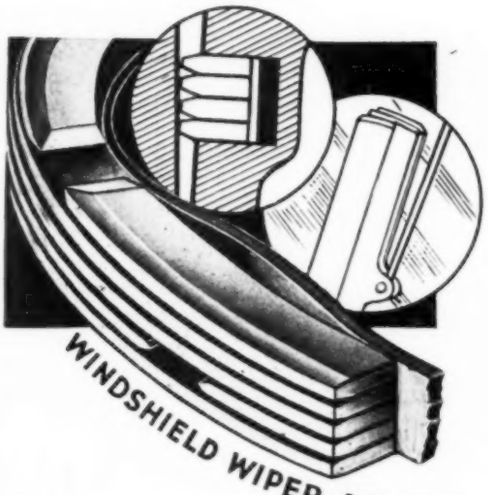




Loafers

Whether human, or in the form of trucks, *loafers never earn a profit!*

The amount of time your truck equipment wastes loafing in the shop depends upon the type of overhaul you give it. Old methods are LONG methods—and *COSTLY methods.* The Simplex MOLIUM method puts trucks back on the road in shortest possible time—and *keeps* them there with lower oil consumption, *longer!*



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No fitting of rings—no filing of gaps—MOLIUM design eliminates gaps. No delicate handling or breakage during installation—MOLIUM metal is frictionless, soft and FLEXIBLE to conform to out-of-round and tapered cylinders. No risky, costly cylinder resizing every time rings are changed—MOLIUM *protects* the cylinder walls instead of wearing them, and CANNOT scratch or score.

Most important, MOLIUM means lower oil bills because each MOLIUM ring provides the same sealing, wiping action as THREE to SIX separate piston rings in every groove!

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How to Select Motor Oils

IT'S just as easy as the above title would indicate, if you follow the sound advice given in this article . . . H. R. Wolf, Research Engineer for General Motors, prepared this valuable data, presenting it originally at the University of Wisconsin, recently. . . . We found it extremely interesting, and we know you will, too.—Editor.

THE physical and chemical characteristics of an engine oil are of considerable importance to a petroleum technologist in determining the source of the crude and the method of refining of a competitive product and in the routine control of his own refinery processes. These properties, however, cannot be readily determined by the ultimate consumer and with the exception of viscosity and pour-point, are of little or no significance to the individual operator.

Prior to the issuance, by the Society of Automotive Engineers, of the viscosity classification for engine oils, the automobile manufacturers were forced to recommend engine oils in terms of trade-marked brands. This system was highly unsatisfactory to both the automobile manufacturers and to the operator. The "Instruction Books" either recommend one or two oils or contained from four to eight pages of recommendations. Due to the similarity in some of the trade names and to the fact that no standardization existed in the use of the terms "light," "medium light," "light medium," "medium heavy," "heavy," "extra heavy" etc., these recommended or approved lists were very confusing. Many instances existed where a "medium" or even a "heavy" oil marketed by one company, was actually lighter in viscosity or body than a "light" or "light medium" oil marketed by another company. Furthermore these approved lists contained the trade names of oils which were not available in all sections of the country and conversely did not include the trade names of many of the more important local brands.

In order to overcome the obvious shortcomings of the approved list of lubricants, the Automotive and Petroleum Industries cooperated in the formulation of the "S.A.E. Crankcase Lubricating-Oil Viscosity Numbers." This classification was originally adopted in 1926 and was quickly adopted by all automotive manufacturers in recommending engine oils, and by practically all of the petroleum marketers in grading their products. The S.A.E. classification is based on viscosity alone, of course, and does not include any of the other debatable or so-called quality tests.

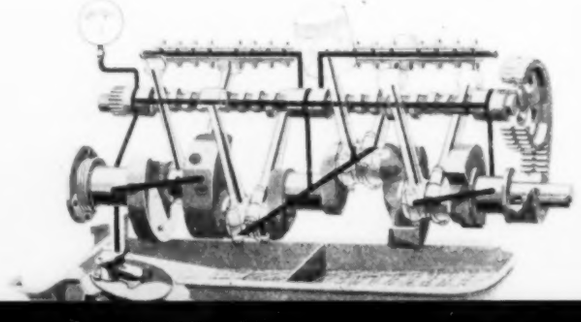
Viscosity is the most important property or characteristic in which the consumer is interested. The average operator, in selecting an engine oil, is interested in two things (1) whether the engine will start promptly on a cold morning and (2) whether the oil mileage is satisfactory. The viscosity of the engine oil at the starting temperature determines ease of starting and the viscosity at the operating temperature of the engine determines oil consumption.

The problem of formulating a system for classifying engine oil which can be accepted by the automotive manufacturers and petroleum interests and at the same time be of service to the operator, is far more difficult and complicated than the writing of a Purchasing Agent's specification for use in selecting a single product for a specific purpose. The typical Purchasing Agent's specification generally specifies minimum or maximum limits on a large number of physical and chemical properties and in addition may specify additional tests to determine the suitability of the product for a specific purpose. These specifications are in no wise an indication of the quality of the product. In many cases the specifications are drawn so as to admit only low grade or low priced products. These specifications are, in the final analysis, used only for the purpose of purchasing lubricants which are refined from the same general type of crude and treated in a comparable manner by the refinery and to secure from several sources products which are similar or identical in properties with lubricants, which are known to function satisfactorily under specific service conditions.

Engine oils, refined from all types of crudes and varying over a wide range in physical and chemical properties, have been used successfully in many millions of automobiles. Since the primary purpose of any classification is to enable the automobile manufacturer to recommend the correct grade of lubricant, without reference to trade name, type of crude or method of refining, all recognized commercial lubricants must be included in the classification and none can be excluded. It is therefore apparent that if the typical Purchasing Agent's specifications are to be employed for the purpose of classifying engine oils, the limits on the various physical and chemical properties would have to be sufficiently wide to include all commercial products. The presence of detailed requirements would naturally infer quality, especially to one not familiar with the development of the specifications in spite of the fact that

TABLE I

Oil	Viscosity Index	Saybolt Viscosity at			
		0° F.	100° F.	130° F.	210° F
A	0	40,000	240	112	45
B	100	40,000	400	185	58
C	0	62,000	265	120	45
D	100	17,000	257	128	50
E	0	650,000	781	280	60
F	100	42,000	426	198	60



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They *know* that inherent rolling self-alignment within the SKF Bearing permits flexibility needed in smooth operation and compensates for chassis weave or frame distortion. Therefore, *you* can know what it is to have long, low-cost bearing performance by following Fageol's specifications. Put SKF opposite "bearings" in your plans for better equipment. SKF INDUSTRIES, INC., Front St. & Erie Avenue, Philadelphia, Pennsylvania.

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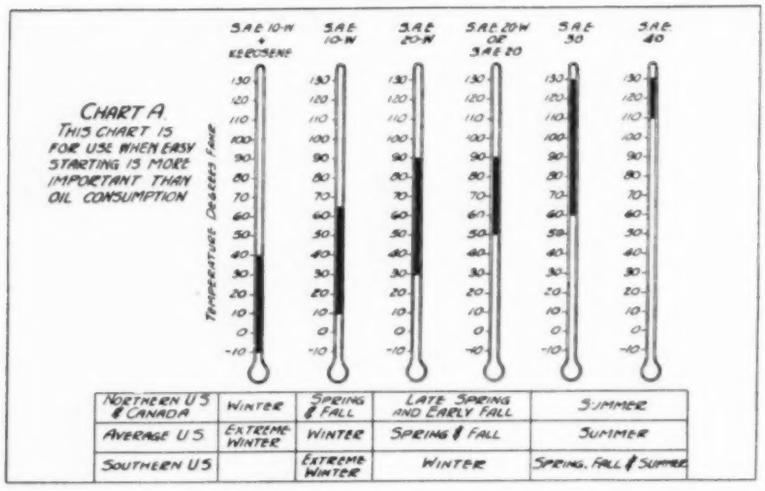


the requirements were liberal enough to include all commercial lubricants. Such specifications would not only be meaningless but would be actually misleading.

It is for these reasons that no reference is made in the "S.A.E. Crankcase Lubricating-Oil Viscosity Numbers" to other miscellaneous properties or tests and this remains strictly a viscosity classification.

The viscosity of an oil changes with temperature. The rate of change of viscosity depends upon the type of crude from which the oil was refined and the method of refining. Consequently, two oils of the same viscosity at a given temperature may have radically different viscosities at higher or lower temperatures. These differences are shown by typical examples in Table I. This rate of change in viscosity or temperature-coefficient of viscosity is termed "viscosity index" and is independent of the actual viscosity. The system for calculating viscosity index, devised by Dean and Davis, is most generally used by the industry.

In this method the rate of change in viscosity is compared with that of two series of oils, each derived from an extreme type of crude oil. The oils having a small change in viscosity with temperature are designated by a high viscosity index number while the oils having a large change in viscosity with temperature by a low viscosity index number. Viscosity index is of particular interest to the petroleum technologist and when expressed in a slightly different form, as the range in temperature required to give the same maximum and minimum viscosity, may be of interest to the operator in isolated cases where the engine is operated under particularly extreme service conditions.

Oils A and B, in Table I, have the same viscosity at 0° F., and at 0°F. both oils will possess identical starting characteristics, but at higher temperatures, which prevail at high operating speeds particularly at higher atmospheric temperatures, Oil A will show a somewhat higher oil consumption than Oil B. In ordinary city winter driving service under temperature conditions where both oils are satisfactory from the cold starting standpoint, little or no difference will be noted in oil consumption and both oils will be equally satisfactory from the operator's viewpoint.

Conversely, oils E and F, Table I, will show practically the same oil consumption at high operating temperatures but will have radically different cold starting characteristics. Oil E will have a viscosity of 42,000 at 30° F. and at this temperature will have the same cold starting characteristics as Oil F at 0° F. Both of these oils are summer oils and would not ordinarily be recommended for atmospheric temperatures below 40 to 45° F., consequently the difference in cold starting characteristics at lower temperatures between these two oils is of no practical significance and would not be a factor in indicating a difference in quality. For summer use both of these oils should give comparable consumption and under average driving conditions should give equally satisfactory service.

From the foregoing discussion it is apparent, that while viscosity is an important factor in selecting a lubricant for a specific use, the viscosity must be considered at the temperature of operation and that the viscosity at other temperatures may be of no practical importance to the consumer.

If viscosity is specified at several temperatures, in order to cover both cold starting at low temperatures and oil consumption at high temperatures or under very high speed driving conditions during the winter months, a classification becomes selective and immediately rejects a large number of commercial lubricants which are perfectly satisfactory under average service conditions.

Oils C and D, Table I, have approximately the same viscosity at 130° F. and consequently show a smaller difference in viscosity at higher and at lower temperatures than if the comparison in viscosity was made at 0°F. or 210° F. The use of an intermediate temperature in order to minimize the differences in viscosity at extreme temperatures between oil refined from different crudes, led to the adoption in the S.A.E. Viscosity Number system of 130° F. as the temperature for classifying the lighter oils. The heavier oils, intended only for summer use, were classified at 210° F. since in these oils viscosity at the operating temperature or oil consumption is the prime consideration.

During recent years the trend in automotive design has been toward increased power, speed and smoothness of operation. The greater number of cylinders and lower piston clearances result in higher engine friction at cranking speed at low temperatures and necessitate the use of engine oils of lower viscosity at cranking temperatures.

In June 1933 the S.A.E. Lubricants Division approved for use and trial a classification for two new winter oils, "10-W" and "20-W." These oils are classified in accord with their viscosities at 0° F. and were originally intended to eventually replace both "S.A.E. 10" and "S.A.E. 20" respectively. These new "W" oils have been widely distributed during the last two winters and have been enthusiastically accepted.

Recent action by the S.A.E. Lubricants Division indicates that both "10-W" and "20-W" will be made official S.A.E. classifications at the June 1935 meeting. They will then be known as "S.A.E. 10-W" and "S.A.E. 20-W." The present "S.A.E. 10" oil will

TO SELECT MOTOR OILS (Continued)

probably be cancelled at this same time. However, due to the recent action of the Division in providing a period of 18 months for the adjustment of refining processes and stocks in the field "S.A.E. 10" will remain in force until January 1937.

Many of the lubricants classified as "S.A.E. 20" at 130° F. also meet the requirements for "20-W" at 0°F. These oils can, of course, be sold under either or both classifications.

Some of the lower viscosity index "S.A.E. 20" lubricants will not meet the requirements for "20-W" at 0° F. These oils are intermediate between "20-W" and "S.A.E. 30" in cold starting characteristics, and will either have to be reclassified or recommended for use in territories where cold starting is not a problem. "20-W" may, of course, be used in these territories and would provide a greater margin of safety on starting. The final disposition of the "S.A.E. 20" oils, which cannot be reclassified as "S.A.E. 20-W," is a commercial rather than a technical problem.

The relationship between viscosity and the power required to crank an engine has been studied by many investigators. A. J. Blackwood, in an S.A.E. paper, gives 23,000 as a conservative figure for critical viscosity for the average modern high-speed, high-powered engine to permit starting at 0° F.

This figure of 23,000 as the critical viscosity for starting at 0° F. would, without the further consideration of other factors or operating conditions, indicate the use of "20-W" oil for atmospheric temperatures as low as 0° F. The viscosity of "20-W" may vary from 10,000 to 40,000 at 0° F. and the oils in the upper half of this range, unless reduced by dilution, will be too heavy to permit satisfactory starting at 0° F. Since "20-W" is intermediate between (winter) "10-W" and (summer) "S.A.E. 30" and will be used at intermediate atmosphere temperatures and under driving conditions where oil consumption becomes a more important factor, most of the commercial "20-W" oils are in the upper half of the range. The "S.A.E. 20" oils which do not meet the viscosity requirements of the "20-W" classification will be above 40,000 at 0°F. and cannot in general be considered for use in typical winter weather. Consequently, in order to insure satisfactory starting, the passenger car optor should use "10-W" oil during the colder months.

The recommendations of the automobile manufacturers and petroleum refiners agree in principle and in substance. For average winter temperatures "10-W" is recommended; for sub-zero temperatures "10-W" plus kerosene; for intermediate temperatures "20-W," and with certain limitations "S.A.E. 20;" for summer "S.A.E. 30;" and for high speed driving under extreme temperature conditions "S.A.E. 40." The exact temperature range for which the several viscosities are recommended depends upon individual engine design.

Some manufacturers recommend changing engine oil at definite temperatures while others specify overlapping temperature ranges. Tables, charts and illustrations are used to convey these recommendations. Many of the sections on lubrication in the Owner's Instruction Books leave the individual in a somewhat confused state of mind as to the correct grade or viscosity of oil to use. There is great need for a more uniform and more intelligent method of presenting oil recommendations.

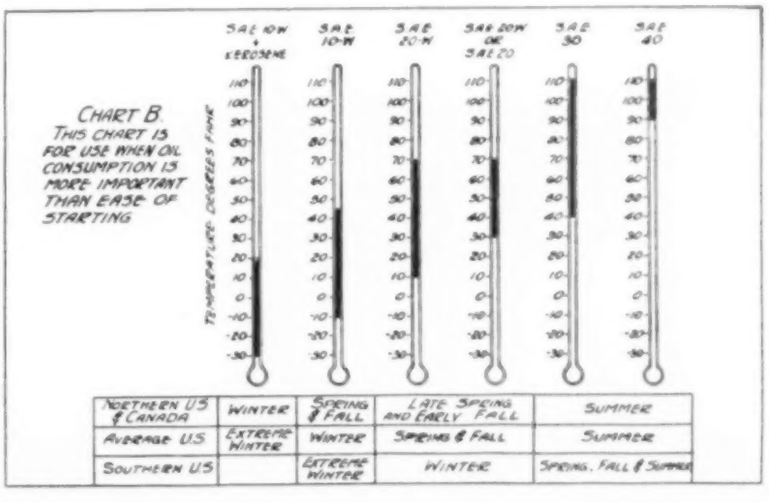
The same consideration that guides the operator in determining the strength of anti-freezing solution required for protection throughout the winter, should guide him in selecting crankcase oil. In the late fall at the approach of freezing weather the operator, if he employs one of the permanent anti-freezes, must estimate the lowest temperature which he expects to encounter throughout the entire winter period. He must then fill the cooling system with a solution sufficiently concentrated to prevent freezing at the lowest anticipated temperature.

Likewise, when the crankcase is drained and refilled, the oil should be selected not on the basis of the existing temperature at the time of change but on the anticipated minimum temperature for the period during which the oil is to be used. Unless the crankcase oil is selected on the basis of the viscosity at the prevailing minimum winter temperature, difficulty in starting will be experienced at each sudden drop in temperature.

A daily minimum and maximum temperature chart for the winter months and one summer month for six widely separated localities in the United States, will show very clearly that in order to obtain the best possible compromise between ease of starting and oil consumption, the selection of S.A.E. Viscosity Numbers must be made on the basis of the local temperature range.

Charts A and B consolidate the recommendations of the majority of automobile manufacturers and present the information in a form which can be easily interpreted by the car owner, fleet operator, and oil station attendant. The atmospheric temperature ranges specified on these two charts is the same for each S.A.E. Viscosity Number; however, on Chart A, which is intended for use when easy starting is more important than oil consumption, each temperature range is 20° F. higher than the corresponding range specified on Chart B. This difference is to insure oil of the proper viscosity at starting temperatures

(*Please turn to page 60*)



THOSE who participated in our Question No. 54 have the complete story. . . . Those who did not will have to be satisfied with this brief resumé of the subject. . . . Here's the latest information on Insurance practices among fleets of various types.

« The Insurance Picture

By H. Clay Fischer,
Editor, FLEET OWNER

ONE of the most important and timely subjects ever covered in our Question-of-the-Month Club was that of Insurance (Number 54), the questionnaire having appeared in our March issue of this year. This subject was of such universal interest that it brought over 200 replies—the largest number that we have thus far received. (We do not have to tell you how much we appreciate your cooperation).

Of course, those fleet men who participated were rewarded with the usual typewritten tabulation of all of the replies; those who did not will have to be satisfied with the brief resumé that follows. Again we will state: If you'd like to get a copy of this tabulation each month, all you have to do is to participate in the "club" by tearing out the questionnaire, filling it out and mailing it in to Yours Truly. Here is a rough outline of our "survey" on Insurance—the result of breaking down the first 200 questionnaires returned to us:

In order to make the questionnaire somewhat inviting, we asked: "*Do you carry insurance on your fleet; if so, what portion of your fleet is covered?* The answers proved conclusively that insurance is the sensible and safe-and-sane thing to carry on automotive vehicles, particularly liability and property damage insurance, for, 186 fleets reported being insured with regular insurance companies, 7 fleets reported carrying their own reserve, or "self-insurance" and only 7 fleets stated that they did not carry any insurance. If you add them together, the total is 200 fleets.

Of the above cases where insurance is carried, practically 100% of the vehicles in each fleet were covered, which proves that insurance should be carried on the *entire* fleet, rather than on certain vehicles which you *think* ought to have it. For, doesn't it always work out that accidents occur just where you least expect them to?

Certain folks will say, "Wait a minute! What about the seven fleets that do not carry any kind of insurance? How do they get that way?" . . . And we don't blame you, for it is a sensible question, and the answer to it is this: In certain portions of the country, it is generally conceded that you just *can't* sue the government for damages—whether it be a municipality, county, state, or the Federal government itself. . . . Of course, we don't wish to go on record as publicly declaring the type of governments who so responded to our questionnaire—you'll have to shut your eyes and take your pick. . . . Another thought: if the particular form of government involved is "dead broke", one will not *want* to sue them for damages, so why go further "in hock" by paying insurance premiums, they reasoned. . . . Does this account for the seven answers reporting no insurance carried? . . . If it doesn't, it will have to, as we can truthfully say that 100 per cent of the *privately* operated automotive fleets participating, reported practically 100 per cent insurance coverage on *all* vehicles.

Another interesting thing: Some of the *publicly* owned fleets do not carry property damage or liability insurance, yet they *do* seem to carry fire and theft insurance. There's something else for you to reason out, along the same lines as above, and, speaking of *kinds* of insurance, here is the breakdown to the question on that subject:

Fire insurance is carried by 151

These pictures, of course, have NOTHING to do with the Insurance Survey . . . . This one is a Dodge K-45 tractor with Fruehauf semi-trailer that covers 600 miles every 24 hours, so we are told, carrying a ten-ton payload.

Here is a typical "bottling" fleet. The Hygrade Water & Soda Company of St. Louis, Mo., has recently added these 10 new Ford V-8 trucks to its fleet of automotive vehicles.

in Automotive Fleets »

200 Fleet Operators

Cooperated in this Survey

fleets; theft insurance by 121 fleets; collision insurance by 50 fleets; all-physical (which means all damage to your own vehicle by *any* manner or means) by 36 fleets; public liability by 177 fleets; property damage by 165 fleets; and cargo insurance by 57 fleets. The foregoing figures apply to *trucks* only, and the reason why they are not nearer the 200-mark is because in some operations responding to this questionnaire, no trucks are operated.

Here is the breakdown as to types of insurance carried on *passenger cars* in fleets: Fire insurance is carried by 143 fleets; theft insurance by 134 fleets; collision insurance by 46 fleets; all-physical insurance by 34 fleets; public liability by 160 fleets; and property damage insurance by 152 fleets. Of course, in some fleets there are no passenger cars operated; hence the figures in no instance equal the 200 mark, which is the total of fleets which participated.

And now we come to buses. Although only ten "strictly bus" operators responded, there are certain truck fleets who also operate buses as a side-line, hence we get the following totals as to types of insurance carried on *buses:* Fire insurance on buses is carried by 15 fleets; theft insurance by 4 fleets; collision by 4 fleets; all-physical damage in only 1 fleet; public liability in 18 fleets and property damage in 17 fleets. These figures only cover insurance on *buses*, where operated, remember, and it is reasonable to conclude that the balance of the 200 fleets surveyed do not operate any buses.

We now drift back to the subject of collision insurance in general, asking the question, *"If collision insurance is carried, in what amount deductible from each loss?"* Some operators did not seem to answer this question, and perhaps we did not word it as well as we might have; however, here is what it means: In many cases policies are issued against collision, with the provision that the first $50, for instance, of damage to the vehicle in any *one* accident will be paid by the owner; all over that to be paid by the insurance company. This type of policy eliminates many small, annoying claims and saves a lot of trouble for the insurance company. In return, any policy with a "deductible" clause enjoys the benefit of a lower premium, in view of the owner assuming the responsibility for small, minor accidents. Of course, there is an "absolute" or full-coverage type of collision insurance policy, if desired, but most operators seem to prefer the former or "deductible" type.

The answers to this question were as follows: On *trucks*, 20 operators carry $50-deductible policies; 15 fleets carry $100-deductible; and a few carry deductibles as high as $250 and as low as $25.

On *passenger cars*, the $50-deductible seems to be most popular, since 22 operators reported this figure; 6 reported $100-deductible, and 4 reported $25-deductible policies.

With *bus* operations, the deductible figure runs higher, probably because the damages can run much higher in *one* accident; hence we find deductibles among bus fleets ranging from $100 to $500. This is easily explained when you consider that even a minor bus collision could result in costly repair expense, because bus parts are usually larger and more expensive, and there's more glass to get broken, too!

Undoubtedly the most important

And this one is another Fruehauf job, hauled by a Reo tractor. It's one of Gerstenslager's standard van bodies of approximately 1,200 cubic feet capacity. A 6-foot loading plank, hinged like a tail-gate is a feature.

form of insurance is that concerning damage to life and/or limb—commonly known as public liability insurance. In addition to the above, we asked the question, *"What limits of public liability do you carry?"* In most cases, this is expressed in two figures, such as "five and ten" (not Woolworth's) but meaning $5,000 for injury or death to one person, and $10,000 to two or more persons. The answers were so numerous, ranging from as low as $5,000 to as high as $300,000 that we won't attempt to analyze them here.

If you are interested further in the answers to this question, perhaps you can cajole Brother Fischer into sending you a mimeographed copy of the complete tabulation—even if you did not participate in it. We're good sports that way—try us and be convinced—just write us a letter and if you operate a fleet, we'll be glad to send you a copy; in return you can answer the *next* questionnaire and we'll call it square; the new question blank is on page 51 of this issue.

And next we come to cargo insurance. We were somewhat surprised to learn that 47 operators (out of our 200) are carrying cargo insurance, particularly because most of the participating firms are *not* carriers of other people's cargoes. The amounts of cargo insurance carried ranged from $250 to $50,000—the amount most often mentioned being $1,000 and you can call this an "average" figure, if you will. Four fleets carry *ad valorem* cargo insurance, which is a fancy way of saying "according to the value of the load."

We almost forgot to get in our report of a most important question—the one having to do with the *type* of insurance *company* with which fleets are insured. In answer to our question, *"What kind of a company are you insured with?"* (That's poor English—one should never use a preposition to end a sentence 'with'), we learned that, if this survey means anything, stock companies seem to have "cornered" the fleet insurance market, since 121 fleets (out of our 200) are insured with stock companies; only 41 are in mutual companies; but 5 are in reciprocal companies; 8 are in stock *and* mutual companies; 1 is in mutual *and* reciprocal companies; and 7 are their own insurers. The remaining few did not choose to answer this question, but we can get a pretty good idea from the foregoing figures.

Of course, there are many arguments, pro-and-con, on the subject of stock versus mutual companies, but we don't intend to drag them into these pages. We won't even comment as to why there seems to be such an overwhelming preference for stock companies, in view of the dividends sometimes passed back by the mutual companies. If you'd like to get our reactions to this, just ask us to come up'n see you some time. We'll be glad to do it, providing you are within walking, riding or hitch-hiking distance of New York City, where men are men, and fleet publications are originated. So much for that, and pardon us for pointing.

We hesitated to ask the next question, well knowing that the returns would be few, but an insurance man inveigled us into it, so here it is. We asked, *"What is your insurance cost-per-mile, if calculated?"* Only a couple of dozen fleet men were able to answer this one, since most fleets do not break down *all* costs on a per mile basis. The cost-per-mile ranged from $.0002 to $.027 for vehicle insurance, the intervals running quite close. If you are statistical-minded you can either figure out your own average, or else write us for a copy of the complete tabulation. (The balance, apparently, do not figure their insurance costs on a per-mile basis.)

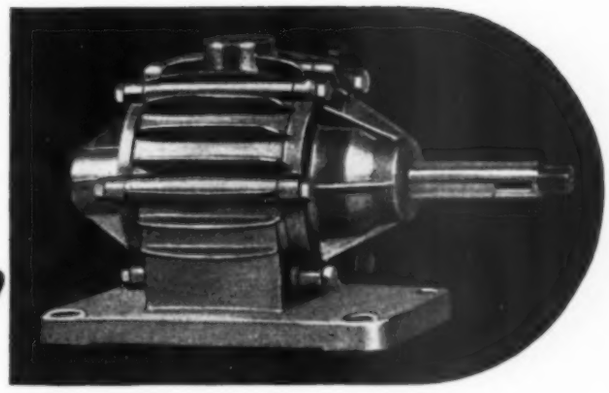
The next question is a rather dry one to us. We asked, *"What is your total mileage of all vehicles in the fleet, per year?"* Only 131 operators were able to answer this one, the *average* total mileage covered by these 131 fleets, per year, being 1,839,390 miles. The total mileage covered by *all* 131 fleets per year, amounted to 240,960,183 miles. Translate that into gallons of gasoline or oil, tires, spark plugs, and pro-rate it among 18,000 fleets, Mr. Manufacturer, and you'll have a pretty good idea of the market covered by the fleet operator's favorite publication—FLEET OWNER—the one which has been his "bible" since 1928. (That was the advertising department getting its "oar" in again.)

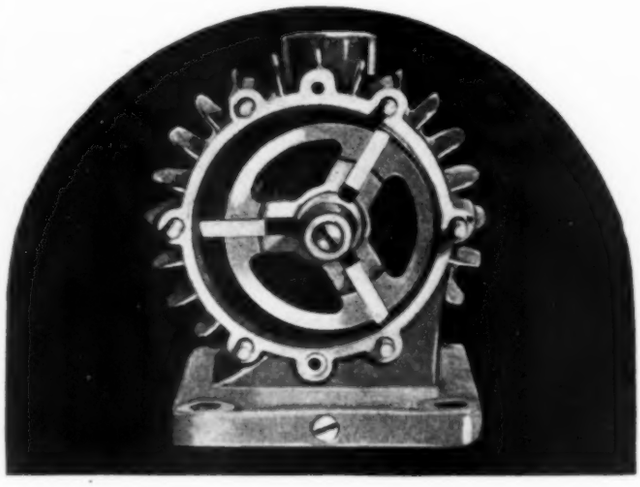
And now the thing begins to get a bit more interesting, the next question being *"Has the institution of safety campaigns or safety equipment helped to reduce your insurance costs?"* Those operators who have been more-or-less indifferent towards safety campaigns and equipment should make a note of the fact that 79 operators answered "Yes" to this question. There were 32 firms who replied in the negative and the balance did not answer this one. So get busy.

(*Please turn to page* 44)

It is interesting to note that long-distance haulers, like the one shown above, equip their vehicles with many safety devices not ordinarily required by law. . . . This type of firm appreciates the value of safety equipment, since they are on the road all hours of the day and night.

BENDIX *New* "CONVAC" VACUUM PUMP





for constant maximum power braking . . . even with open throttle!

WORLD'S foremost specialists in vacuum power applications, Bendix introduces the most efficient vacuum pump ever devised. Operating on the eccentric, centrifugally sliding vane principle, it produces full 28 inches of vacuum at 3,000 r.p.m., while at 200 r.p.m. the vacuum drops to but 25 inches!

Use of the new Bendix "Convac" Vacuum Pump in Bendix B-K Power Braking installations makes braking power totally independent of engine speed. Natural manifold vacuum, of course, varies with engine r.p.m., being greatest at low speeds. In practice, due to inertia of heavy engine parts and truck momentum at high speeds, an appreciable number of seconds may elapse before engine speed will drop to idling rate when throttle is suddenly closed. This lag, objectionable to many operators, of course has no bearing on braking power when the Bendix "Convac" pump is used.

Brakes may be applied repeatedly with full force with the throttle wide open. This feature is especially valuable in certain twin-engined, dual-drive installations, where quick maneuverability of the vehicle may be accomplished by application of brakes on either side, at wide open throttle. It is advantageous also in power braking applications to long tractor-trailer trains, and where closely repeated brake applications are employed.

The Bendix "Convac" Vacuum Pump is designed for installation on standard base mountings. Correspondence is invited.

BENDIX PRODUCTS CORPORATION

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(*Subsidiary of Bendix Aviation Corporation*)

gentlemen, and give a thought to the subject of safety, if you are not already doing it. It will save you money in the end.

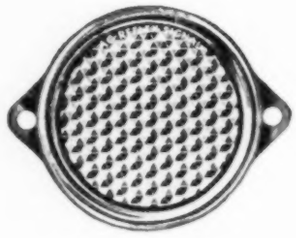
Of course you will be interested in knowing just how much of a premium reduction a safety campaign can bring about, so we asked, *"If so, what per cent reduction in cost?"* Believe it or don't, 4 operators reported reductions to the tune of 50 per cent; 14 more reported reductions over 20 per cent and as high as 40 per cent; and 16 more reported reductions from as low as 2½ per cent to as high as 16 per cent. In the balance of the replies from operators who could trace definite reductions, the exact figures were not available. Some, however, could not report reductions, but were able to report prevention of increases.

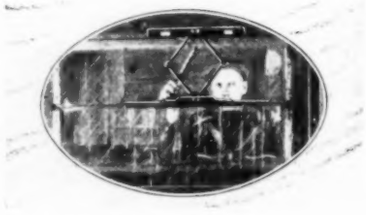
Another thing you will be interested in finding out is just what safety measures effected such startling premium reductions. We asked what these were and here, roughly, they are: Driver Training, 88; No-Accident Campaigns, 73; Bonus and Certificate Awards to Drivers, 38; Flares, Marker Lights, etc., 64; Reflectors, 63; Turn-Signals, 20; Fire Extinguishers, 50; Air or Booster Brakes, 62; Alarm Systems, 4; Governors on Engines, 2. (The figures after each classification indicate the number of fleets mentioning such safety measures). Among other factors mentioned were: Penalizing Drivers, Safety Meetings, Accident Court, Safety Posters, Dash Cards, Safety Blackboard, and Road Patrols.

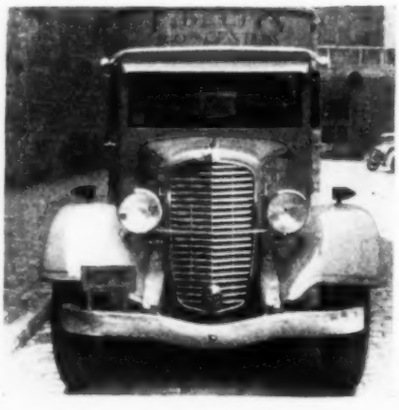
In order to institute such safety measures, some sort of specialized personnel trainer is needed, so we asked the question, *"Do you employ a safety engineer?"* Twenty-eight fleets reported "Yes"; 146 operators said "No" and 26 did not answer.

In order to make our question more fool-proof, we further asked, *"Or, is a safety engineer provided by your insurance company?"* Sixty-two operators said "Yes"; 80 reported "No"; and 58 did not answer this one. So at least we can conclude that out of 200 fleets, there are at least 90 fleets in which the activities of a special safety engineer are utilized.

The next question probably looked like the "joker", so only a few fleet men answered it. We asked, *"Is there any other type of insurance that you NEED, but that is not now provided by insurance companies?"* We were quite sincere about this, but since it might have looked (through your glasses) like some kind of a "sales prompter" in disguise, we can understand why it brought so few replies. Here they are:







"Insurance for long distance trucking is hard to get and price is prohibitive."

"Protection to contractors who hire trucks from us."

"Lower cost for collision insurance."

"Extra liability assumed under contracts."

"Protection against burglary of packages from trucks."

"Insurance on personally-owned cars in company use."

Next we asked for "Remarks" and we got plenty of them—good, bad, intelligent and wise-cracking ones. Rather than comment on them, we shall list them here, in brief, so that he who runs may read:

"Permitting drivers to organize their own Safety Council has gone a long way to prevent accidents."

"Driver-talks have done much to reduce accidents."

"Believe our rates are exceedingly high; having a very good experience, we believe our rates should be based accordingly."

"Fire, theft and collision insurance carried in a reserve of our own, at 60% of rates charged by mutual companies."

"There should be an experience-rating to determine rates."

"There has been an improvement in adjustment of claims."

"Just started a safety campaign and have already noted a change for the better."

"Rates should apply to each operator, independently of others."

"We feel that rates are still too high."

"Lower-cost collision insurance would be welcomed."

"Each driver required to carry his own insurance; usually by an endorsement to their own car policy."

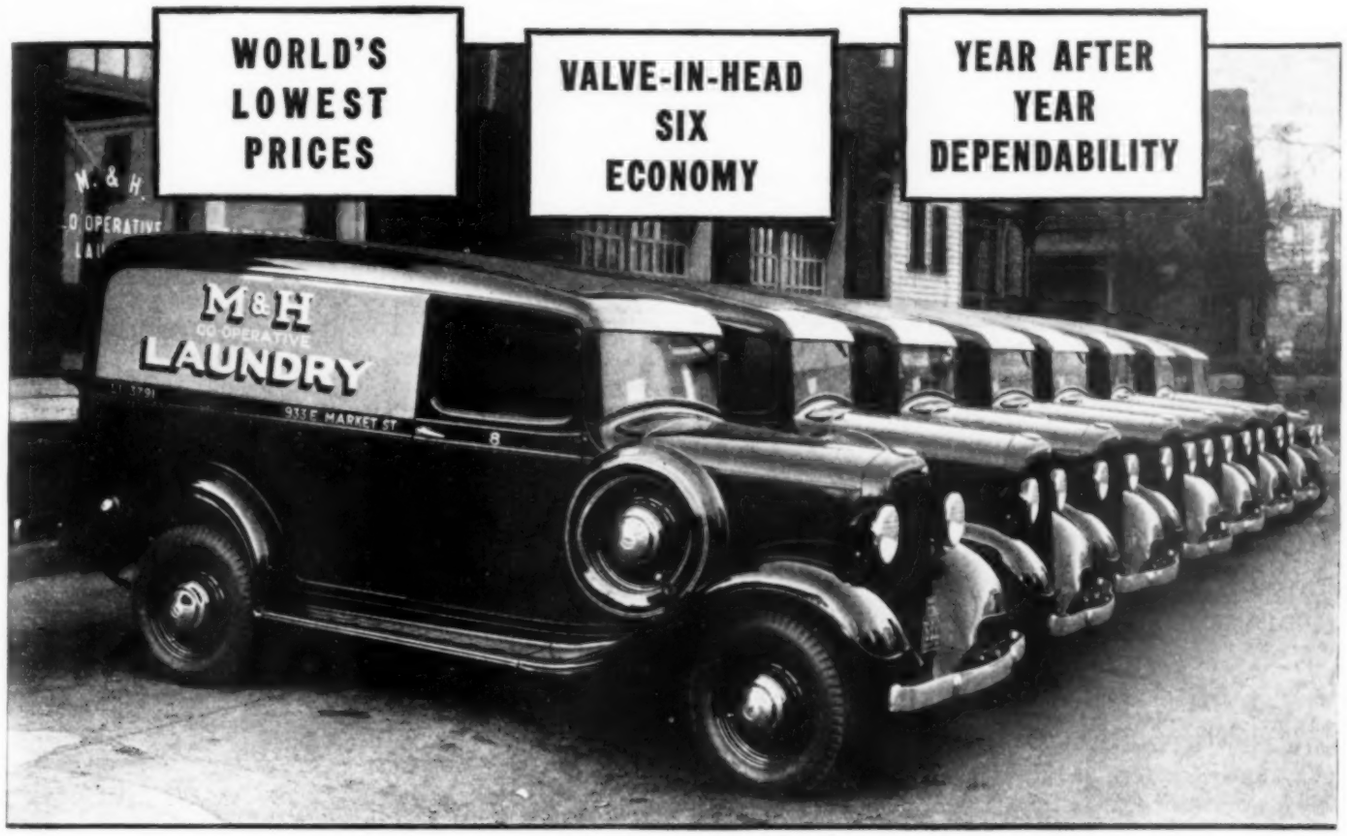
"State rate boosts are too high; they exceed our discounts in mutual companies, in spite of our low accident rate."

"Rates should be based on individual records—not community ones."

"Insurance has been one of our

(Please turn to page 67)

IT PAYS 3 WAYS TO BUY CHEVROLETS



CHEVROLET Today, when every wise buyer of trucks is particularly interested in getting dependable transportation at lowest cost, the money-saving advantages of Chevrolet Trucks have a particularly strong appeal. Truck buyer after truck buyer is discovering that *it pays three ways to buy Chevrolets.* And truck buyer after truck buyer is deciding to take advantage of the big savings which Chevrolet offers. You, too, will get *better haulage service at lower cost* by buying a Chevrolet Truck because of these triple economies:

1. **Chevrolet Trucks sell at the world's lowest prices.**
2. **They use less gasoline and oil because they are powered by six-cylinder valve-in-head engines.**
3. **They give longer, more dependable service because of the *extra quality* which Chevrolet builds into every part of its products.**

Visit your nearest Chevrolet dealer—*this week.* Have a thorough demonstration of the right Chevrolet Truck for your haulage needs. Buy a *Chevrolet* and get better truck performance at the *world's lowest prices!*

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN

Compare Chevrolet's low delivered prices and easy G. M. A. C. terms. A General Motors Value

CHEVROLET TRUCKS

The TROUBLE SHOOTER

A department, devoted to correspondence from readers of FLEET OWNER. Any questions having to do with automotive service will be answered in this department. All properly signed inquiries will be replied to by mail and such of them as are believed to be of possible interest to other readers will be published in these columns.

What About "E. P." Motor Oils?

Question: We would like to get your opinion on the latest claim for motor oils—extreme-pressure characteristics. We have been approached by salesmen who demonstrate load-carrying capacity of their motor oils, by using a machine for testing, in our presence. What do you think of this new development?—F. S., Philadelphia, Pa.

Answer: Here's where we step on somebody's toes, but the subject of oil is always a controversial one, and if our findings are not correct, we'd like to be told about it.

As far as we have been able to learn, there seems to be no demand for motor oils with "extreme pressure" characteristics. We have been able to find no instruction book of any car, truck or engine manufacturer that recommends this type of lubricant.

One refiner tells us that even used crankcase oil will show a better test on such machines, since such oil will have more acidity and foreign matter than new oil. So what?

If the addition of chemical compounds to lubricating oil builds up its pressure-carrying characteristics, and results in contamination of a serious nature, such as corrosion tendencies, it would seem better to forget about them. If such chemical compounds will cause increased wear, in their haste to provide pressure-carrying characteristics, again they should be avoided.

If these lubricants are being tested on machines that were obviously designed to test rear-end lubricants, there's no reason for you to get excited, because engine bearing pressures are only one-twentieth as great as rear-end pressures, and engines do not require oils to perform as in rear-ends or transmissions.

We do not wish to go on record as keeping your minds closed on this important subject. Future research may indicate the desirability of chemically compounded oils. But up to the present, no refiner has presented sufficient data to us, to give us any opinion, other than those expressed above. (How's that for evading the question?)

You May Not Believe It!

(But It's True)

THE FACT:

WHITE paint applied over an aluminum primer, will stand up better on wood, than if the white paint itself is used for the primer.

THE PROOF:

"REPEATED comparisons of the durability of white paints on wood when applied in the customary manner, using both white and aluminum paints for the primer, consistently demonstrated a distinct superiority in service for paint applied over aluminum primer," says F. L. Browne, U. S. Forest Products Laboratory, in a recent issue of "Industrial and Engineering Chemistry" . . . The improvement in durability was manifested by a retardation in the rate at which paint coatings, embrittled with age, flaked from the wood where the aluminum primer was used.

●

Wants More Gas Mileage from Model A

Question: We have a 1931 four-cylinder Ford car, which was rebored at 33,000 miles. The mileage is now 59,000. This car gave us very little gas mileage when we bought it, and it failed to improve after sending it back to the dealer a few times. The best we were able to get was 12 miles to the gallon.

So far as we can see, nothing is wrong. The dealer also checked it over several times. Valves are in good shape, timing is o.k. We then bought a new high-speed jet for the carburetor, new needle valve, etc., and overhauled the carburetor, after which the mileage improved to about 13 to 14 miles, the driver coasting as much as possible.

We feel that it should be possible to get more mileage. Would you suggest putting on a Model B carburetor, which we understand is more economical on fuel? What about using a higher compression ratio?—N. D., Milwaukee, Wis.

Answer: We presume that this is a passenger car, not a truck, and feel that you ought to get better gas mileage. Since you seem to have checked everything mechanically, and since this is comparatively simple procedure, we will assume that timing and tune-up are o.k.

We are wondering what kind of a rebore job was done? If this was a poor one, and you are getting a lot of oil dilution, this will probably explain where your gas mileage is going. This is worth looking into, we believe.

Your suggestion to use the Model B carburetor is a good one; you might also use a Model B distributor, as this has an automatic spark advance, which your present car does not have. If you are desirous of increasing the compression ratio, you might plane

about 1/16" off the head, or, better still, you can obtain a replacement head with a higher compression ratio.

Of course, much depends on the driver's habits, and we might suggest that you try this car with a different driver, if possible, and then compare results. It is difficult to answer a problem of this kind by mail; however, we feel that you ought to get better mileage, particularly in your city, which is not a very hilly one.

●

Some Helpful Roller-Bearing Hints:

SINCE the finest of anti-friction bearings will wear, even in a well lubricated housing, and the time will come when bearings must be adjusted or replaced, the following hints, offered by The Timken Roller Bearing Company, will be found helpful.

While this will appear rather elementary to most operators, who already know that tapered roller-bearings can be "taken up" by removing shims, or turning the adjusting nuts, yet may we offer these few simple rules? Sometimes the simple things are most easily forgotten, so here they are:

1. If the cone and roller assembly is damaged, examine the cup. Should this be worn excessively, broken, or chipped, it should be replaced. Never install a new cone and roller assembly in a worn-out cup.

2. If a cup is broken or damaged, examine the cone and roller assembly carefully. If it is in good condition, only the cup need be replaced. However, if it is damaged, the whole bearing should be replaced.

3. Check the housing for fit. Never install a new cup in a worn-out hub or housing.

4. When making replacements be sure that the housings or hubs are clean and free from grit or dirty grease. Use only fresh cleaning fluid, and pack the bearing with good fresh grease or see to it that the lubricant to be used is clean and fresh.

●

What Lubricants for Worm Gears?

THE following pertinent paragraphs are clipped from a paper read before the recent Annual Meeting of the S. A. E. in Detroit. The author is C. H. Schlesman, engineer for Socony-Vacuum Oil Company. He said in part:

"Our experiments show that no single product possesses all the desirable characteristics but that the best lubricant must be selected for each class of service. Lubricants composed entirely of animal or vegetable oils can, under certain conditions, show minimum power losses in an axle without tearing or scuffing the tooth surfaces. However, these oils oxidize more rapidly and cause higher rates of gear wear than the best mineral oils.

"Under certain conditions of service, the use of specially thickened oils or greases is necessary. These products, while less stable than mineral oils, are particularly useful in preventing leakage. Leakage must eventually be cleared up by the use of better seals or by better axle design. Certainly few things are as humorous as the attempts of some of our leading automotive engineers to staunch the flow of oil into brake drums after their latest creations have appeared in service.

"The use of extreme pressure lubricants with worm gears, although generally undesirable, may be a remedy for overloading of the anti-friction bearings. Very active extreme pressure lubricants, however, produce rapid wearing away of the wheel. This class of lubricant is also prone to cause corrosion of the worm and its bearings.

"Thus, with conventional worm gears, it is concluded that a well-refined oil is the most satisfactory lubricant for general use where tooth loadings are not excessive. Such products provide adequate lubrication and combine the ability to hold worm wheel wear to a very low point, with remarkable resistance to oxidation and freedom from corrosion troubles."

●

Bringing the Equipment to the Job

THAT old trick of Mohammed's—going to the mountain, instead of having the mountain come to him—suggested an idea that can well be followed by fleet operations in which there is a great deal of scattered, outdoor, semi-portable machinery. Public utilities, county and state highway departments, construction firms, etc., will find this idea acceptable, too.

In the accompanying photograph can be seen a "travelling workshop", built and operated by a prominent firm, for just such purposes. It is equipped with oxy-acetylene generators, welding and cutting equipment, grinding wheels and kindred maintenance equipment for all types of field repair work.

The various equipment is mounted on a home-made trailer, built of discarded, obsolete auto parts. The trailer, in turn, is towed by one of the work-passenger cars of the fleet. If this is an "idea", you're welcome to it!

●

Lubricating Schedule Prevents Failures

A FAMOUS dairy company, operating fleets of heavy-duty equipment, has completely eliminated gear-lubricant failures by this simple plan: in each garage is charted a transmission and differential lubrication program, based on a definite, predetermined mileage schedule. Careful following of the schedule has resulted in the complete absence of gear-lubricant failures.—*Marquette Lubricator.*

●

Paint-Spray Booth For Sale (Adv.)

DEVILBISS Canopy Spray Booth, 20 feet long, 15 feet wide. Hinged sides make it accessible for both large and small equipment. Complete with exhaust system. Two years old. Will accept any reasonable offer. Address G. B., c/o Editor, FLEET OWNER, 90 West St., New York City, for full particulars.

FOUR INTERESTING FLEET OPERATIONS

UPS Runs Another Gas-Saving Contest

ANOTHER "gas-saving" contest is being run by United Parcel Service in New York City. Contests are now under way in their various distributing stations.

This year prizes will be based on a percentage of actual savings, and three prizes will be awarded each month in each station, the prize money going to the three men with the best monthly averages. It is possible that later on a grand prize for the station making the best showing within a six months period will be announced.

A driver's gasoline mileage record chart will be posted in every station showing results from day to day. A standard or quota for each car will be set, the actual average made, and the gain or loss will be shown daily. At the end of the month the total points for each man will be divided by the actual number of days he worked, and the men with the highest, next highest, and third highest averages get the prizes.

●

Tractor-Trailer Jobs Serve Many Stores

THE principle of "State Products for State Store Service," is carried out by the National Tea Company in the establishing of their tri-weekly delivery route to a series of their Wisconsin stores, north of Milwaukee.

Two units recently installed on the circuit are FWD (four-wheel drive) semi-trailer equipped tractor trucks, manufactured by the Four Wheel Drive Auto Company, in their plant at Clintonville, Wisconsin. These units are rated at 60,000 pounds gross capacity.

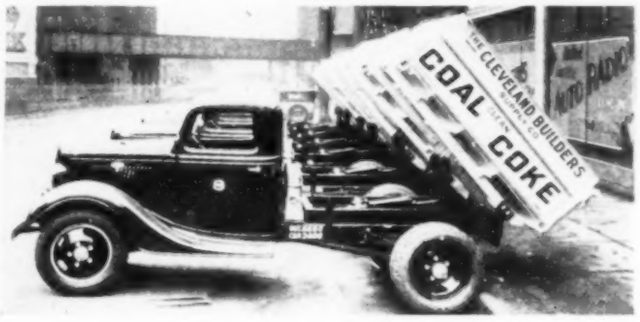
One claim made for this equipment by its manufacturers is "dependability of service." This was demonstrated the latter part of February when one of these trucks plowed its own way through snow filled roads to make its regular delivery. At the same time it opened up the road for a score or more cars that had become stalled during the night.

The extension of the service was made necessary by the recent opening up of two new National Tea Stores, one at Clintonville, in Waupaca County, and the other at Shawano, sixteen miles farther northeast.

Taking load at Division Headquarters of the universally known National chain in Milwaukee, deliveries are made Tuesdays, Thursday, and Saturdays at West Bend, Fond du Lac, Oshkosh, Appleton, Neenah, Clintonville and Shawano. Lengthening of the route is to be made in the near future to Antigo, two hundred and four miles north of Milwaukee. The round trips are to be made on a schedule of one-day runs.

New Fleet for Ohio Fuel Deliveries

THE fleet of six 1935 Ford V-8 131½-inch trucks pictured here, recently were purchased by The Cleveland Builders Supply Co., for use in delivering fuel to householders in Cuyahoga County, Ohio.



They are fitted with Galion hydraulic hoists and special one-piece, electrically-welded bodies of 10-guage high-carbon, high-resistant steel, 84 inches long, 66 inches wide, and 17 inches high. By means of a conveniently placed lever, the driver manually controls the double-acting endgates.

●

Safe Drivers in Providence Get Awards

TWENTY-SEVEN commercial drivers including 14 employed by Louttit Laundry Company and 11 in the employ of What Cheer Laundry, Providence, R. I., will be presented awards for safe driving by the American Mutual Liability Insurance Company, it was announced recently by C. E. Pettibone, vice president of the company and former president of the National Safety Council. The remaining two awards will go to drivers of Swiss Cleansing Company, in Providence, R. I.

Gold medals will be presented to four drivers, signifying five consecutive years without an accident. Eight former gold medal winners will receive certificates testifying to from six to eight years without an accident. The awards will be presented at a joint meeting of the model truckmen by a representative of the Providence branch of American Mutual, Turks Head Building.

Apparently, Providence is out to earn a reputation for itself as a city of safe drivers.

●

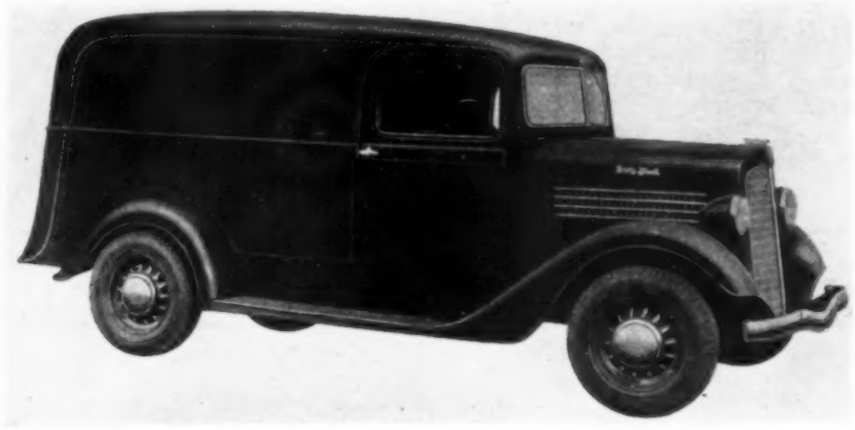
One-Third of Deaths Traced to Bad Light

SOME 31,000 people were killed on the highways in 1933, half of them at night. One-third of the night fatalities could have been prevented by adequate lighting, says the National Bureau of Casualty and Surety Underwriters.

Out of a total of 203 fatalities during the two-hour morning period studied in the survey—5 a. m. to 7 a. m., a period of light in summer and darkness in winter—64 occurred during the summer months and 139 during the winter months.

One group of cities increased its street-lighting budgets 11 per cent and experienced a 25 per cent reduction in night fatalities. Another group reduced its street-lighting budget 14 per cent and suffered a 7.6 per cent increase in night fatalities.

STEWART "BUDDY" BIDS FOR ECONOMY



BIDDING for economical operation, The Stewart Motor Corporation of Buffalo, N. Y. announces production of a new and somewhat different ½-ton type of delivery truck, known as "Buddy Stewart." The chassis lists at $495 f.o.b. Buffalo.

The new "Buddy" was designed for real economy of operation, the makers state. The motor is a small, 4-cylinder job with a 3¼" bore and 4" stroke. A smart panel body has been designed for this chassis, supplied in 6½' and 7' loading space. Wheelbase is 113 inches, standard, and the chassis weighs 2,110 pounds. Some of the detailed specifications follow:

The 4-cylinder motor has a 3-bearing crankshaft, 2⅛" in diameter, and develops 35 brake h.p. at 2,800 r.p.m. The job seems up-to-date in all respects, as it has a full-pressure lubrication system, steel-backed main bearings, head-mounted water pump and full electrical starting and lighting equipment. Carburetor is a Zenith down-draft, equipped with air cleaner and silencer.

The chassis is equipped with a single-plate, 10" clutch, three-speed transmission, I-beam front axle, spiral-bevel-gear full-floating rear axle equipped with Timken roller bearings, tubular drive-shaft, and needle-bearing universal joints.

Service brakes are of the four wheel, hydraulic type, 13" x 2" front and rear. The hand brake is located on the drive-shaft, at the rear of the transmission. Steering gear is a Ross cam-and-lever job, with 3-spoke, 17" steering wheel.

Springs are of the conventional semi-elliptic type 38½" x 1¾" front, and 50" x 2" rear. Air balloon wheels of the demountable type, with spare wheel, are provided, as are chromium plated, large hub-caps. Tire size is 6.00 x 16, four-ply, single rear. Oversize balloons are available in 6.00 x 16, six-ply, or 6.50 x 16 six-ply, at extra cost. Tire carrier is mounted at the rear.

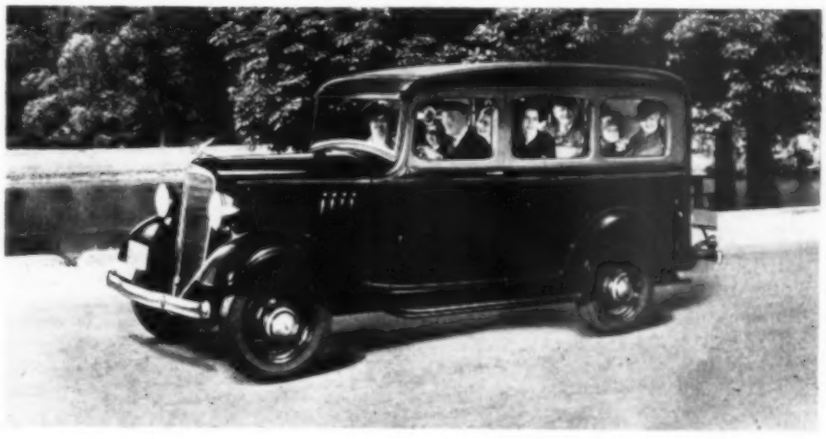
Instrument panel is equipped with ammeter, oil gauge, choke control, lighting and ignition switches, gasoline gauge and temperature gauge. Parking bulbs are in headlamps. Dimming is by foot-switch. The usual accessory equipment is provided at no extra cost. Literature is now ready. When writing for it, mention of FLEET OWNER will be appreciated.

•

CHEVROLET SUBURBAN "CARRIES ALL"

CHEVROLET has recently announced the introduction of an innovation in transportation units, called the "carryall suburban" model, which can be used interchangeably for the hauling of merchandise or as a passenger-vehicle seating eight persons. Wide acceptance of the new type body is predicted, because of its versatile utility.

It is designed to fit the needs of owners of small business who primarily require a commercial vehicle, but who will use it also as a family car; and to appeal to schools, camps, clubs, hotels, and other purchasers whose first need is for a passenger vehicle of greater capacity than regular models, for ready use also for hauling baggage, supplies, and other loads.



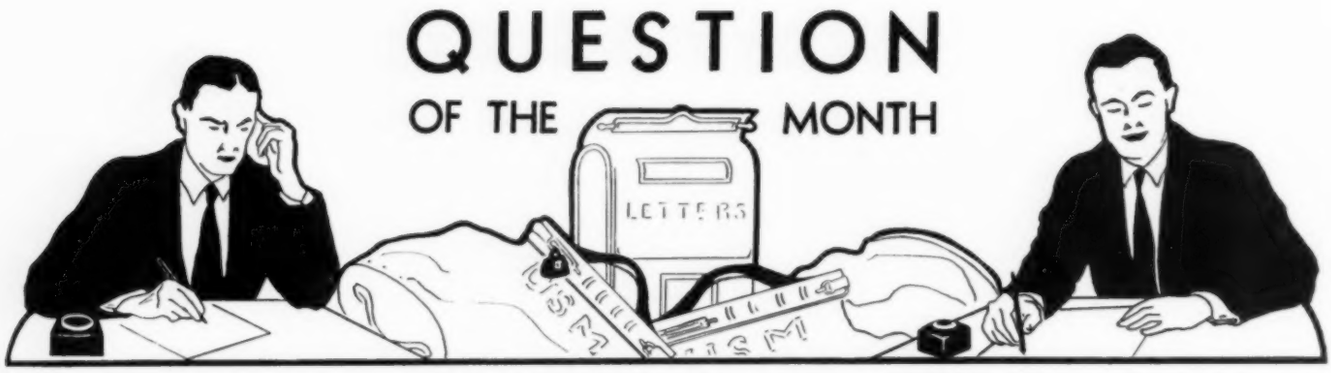
The carryall suburban body is mounted on the Chevrolet 112-inch wheelbase chassis equipped with 5.50-17 tires. The new model carries a list price of $680.

For commercial purposes, the body provides a load space 75 inches long, 52 inches wide, by 51 inches high. Loading is through the rear, which is provided with a horizontally divided closure, the lower half dropping to serve as a sturdy tail gate, and the top half opening upward, its weight carried by a spring-balanced safety support.

As a passenger vehicle, the car seats eight persons, the front and rear seats holding three each, the middle seat two. Entrance is by the right front door, past a tilting coach-type single seat and an aisle alongside the middle seat. All except the front seats are readily removed or replaced, providing for the conversion of the vehicle for either commercial or passenger use.

The chassis is of standard Chevrolet design, carrying the 70-horsepower Blue Flame engine, three-speed syncro-mesh transmission with silent second, cable-controlled brakes, and wire wheels.

Literature covering the new Chevrolet "carryall suburban" is now ready. When writing for free copies, address Commercial Car Department, Chevrolet Motor Co., Detroit, Mich. . . . . Mention of FLEET OWNER is always appreciated.



A FEW REPLIES TO THE PISTON-PIN QUESTIONNAIRE (No. 55)

By John S. Smith, Mgr.

Aero Mayflower Transit Co., Indianapolis, Ind.

"ALL of our pin-fitting is done in our own shop, using power-operated reamers and finishing with an electric hone. We are thoroughly satisfied with this method.

"We fit about 20 to 30 sets of piston-pins per month and our average mileage per set of pins is about 40,000 miles. Replacement pins are obtained from automotive jobbers; we prefer two particular makes.

"We also fit all of our bushings and other bolt or pin holes with the same equipment mentioned above and find it quite satisfactory. Our fleet consists of 100 trucks of the long-distance van type."

●

By V. C. Blais, Supt. Transp.,

New England Bakery, Pawtucket, R. I.

"FITTING of our piston-pins is done by hand, in our own shop, using reamers. We are not satisfied with this method, as it is too slow. The reamers must be kept in perfect condition or a jagged surface will result.

"If we were to change methods we would prefer an electric hone or stone-type grinder. Perhaps the ideal equipment would be power-operated reamers for heavy cuts and then followed up by electric honing or grinding for a smooth finish.

"We fit at present from four to six sets of pins per month, our average piston-pin mileage being about 30,000 miles. Replacement pins are purchased from jobbers and vehicle dealers. We operate at present a fleet of 45 trucks and 10 passenger cars."

●

By E. P. Morgan, Garage Foreman,

Adley Express Co., Inc., New Haven, Conn.

"OUR fleet is very nearly 100 per cent Mack equipped, and we buy pistons and pins already fitted, from the factory branch. The same thing is true of spindle bolts and bushings and other related parts.

"These trucks are practically entirely trouble-free, so far as the above units are concerned, when properly lubricated, as we do it. We have 64 trucks, 8 tractors, 12 trailers, 6 passenger cars and 4 miscellaneous vehicles."

By Karl Stouffer, Mechanic,

Peoples Freight Line, Inc., Tucson, Ariz.

"VERY seldom do we fit any piston-pins in our own shop; this work is usually farmed out to our cylinder regrinder. When we fit our own, we use reamers and also a paper-type hone. The reamers are operated by hand and we are satisfied with this method.

"Our approximate mileage on piston-pins is 100,000 miles. Replacement pins are secured from both jobbers and vehicle dealers. We find that it seldom is necessary to replace piston-pins between motor overhaulings. We sometimes replace them in passenger cars when necessary, but have some trucks with 120,000 miles on them and the pins are still good.

"Our fleet at present consists of 10 trucks and tractors, 4 trailers and 2 passenger cars."

●

By R. P. Batkin, Shop Foreman,

Santa Barbara County, Lompoc, Calif.

"PISTON-PINS are fitted by us in our own shop, using reamers operated by hand. We are *not* satisfied with this method, as the reamers produce chatter, and we feel that pin holes should be honed. If we were to change methods, we would use some type of hone for this work.

"Replacement pins are secured from automotive jobbers. We do not specify them by make when ordering. Our fleet consists of 11 trucks, 4 tractors, 1 trailer, 2 passenger cars and 3 pick-ups."

●

By Stanley Adams, Mechanic,

Peoples Laundry Company, So. Chicago, Ill.

"ALL of our piston-pin work is farmed out to our cylinder regrinder, who uses power equipment; he also handles first-grade replacement parts.

"We have in the past borrowed reamers and reamed the pin-holes ourselves, but we find it much cheaper to send this work out to a reliable jobber or machine shop, as it saves time. While they are fitting the pins, we can take up on bearings, grind valves and check over the balance of the engine.

"We have also found that a man doing this sort of work all day long can do a much better job in *less* time, than someone who only does it now and then.

"We get about 30,000 to 40,000 miles out of a set of piston-pins."

By V. H. Knowles, Supt. Equip.,

Victor Lynn Transportation Co., Milford, Del.

"ALL piston-pins are fitted by us in our own shop, using reamers and finishing with the paper-type electric hone. The reamers are power-driven and we are quite satisfied with our work.

"We only fit about three sets of pins per month, and our approximate average mileage per set of piston-pins is from 40,000 to 60,000 miles. Replacement pins are obtained from jobbers and from the vehicle manufacturer's branch. When ordering, we specify the make we prefer.

"In addition to pin fitting, we do other bushing jobs, such as spindle-body bushings, etc., with our pin-fitting equipment. We operate a fleet of 32 trucks and tractors, 33 trailers and 7 passenger cars."

●

By T. F. Brown, Garage Supt.

Green Spring Dairy, Inc., Baltimore, Md.

"WE have found by actual experience that it is cheaper to have piston-pins fitted by jobbers, when you take into consideration the cost of the equipment and the mechanic's time.

"All of our repairing is done in our own shop, except piston-pin fitting, cylinder reboring and main-bearing boring, as we figure it is cheaper to have this work done outside, than to invest in the equipment.

"All of our trucks are greased and oiled every 1,500 miles, an item which if practiced continuously is 75% of the solution of low-cost operation for any fleet owner.

"Our trucks make about 500 stops and starts a day, and each truck is run between 40,000 and 50,000 miles before it is ready for a complete motor overhauling.

"We feel that a good quality of oil and the right S. A. E. number, low r.p.m. of motors and constant attention to lubrication are the factors responsible for our low cost of up-keep and a minimum amount of road breakdowns. Our fleet at present consists of 39 trucks and 6 passenger cars."

●

By J. VanDuzer, Foreman,

Hechinger Company, Washington, D. C.

"WE do our own piston-pin fitting and use hand-operated reamers. This method is not quite satisfactory, as there is a great deal of chattering and gouging. If we were to change methods, we would use a stone-type electric grinder.

"However, we only fit about one set of pins per month, our average mileage per set of pins being about 45,000 miles. Replacement pins are purchased from jobbers.

"With our reaming equipment we also recondition spindle body bushings, water-pump bushings, steering sector housings and other bushing jobs. We operate 22 trucks and tractors, 32 trailers, and 3 passenger cars."

(Please tear out and mail to The Editor, The Fleet Owner, 90 West St., New York City)

Question No. 57 — Cooling System Problems

How often do you drain and flush radiators and cooling systems? .....
What method and materials do you use for this purpose? .....
When ordinary flushing methods won't clean a radiator, what method is then used? .....

.....

Are you troubled with foreign deposits (lime, magnesium, etc.) due to the water in your locality?
If so, what have you done to overcome this condition? (Please explain) .....

.....

Do you use anything to "treat" or soften the water before using? ..... If so, what? .....
When vehicles are on the road, are they permitted to pick up water anywhere? .....
Has this caused any difficulty? ..... Some fleets carry extra water; does yours? .....
Do you use any prepared solutions to prevent internal corrosion? ..... If so, what? .....
Where motors have aluminum heads, what is used to clean cooling systems? .....
Have you experienced any trouble in cleaning such cooling systems? .....
Does periodic flushing of cooling systems effect definite maintenance savings? .....
Does it pay you to give special attention to the cleaning of cooling systems? .....
In your opinion, is the water in your locality suitable for use in cooling systems? .....
If not, does the need exist for a "softener" to make such water fit for use? .....
What are some of your common cooling system troubles? (Please explain) .....

.....

Remarks .....

.....

How many vehicles in your fleet? (Please state below)
Trucks or Tractors ..... Trailers ..... Pass. Cars ..... Buses ..... Miscellaneous .....

Note: If you cooperate with us and fill out this questionnaire, you will be entitled to a tabulated report covering all of the answers.

Swap your Maintenance experience with other fleet operators in this easy, convenient way. We do the work. You get the benefit.

Name of Firm .....
Address .....
City and State .....
Your name .....*Position*.....

Crossing the Syrian Desert With Trucks

THE Four Wheel Drive Auto Company, of Clintonville, Wisconsin, has established a dealership in Syria. The new dealer is an exporter and importer of renown in Western Asia.

C. S. Thompson, Foreign Sales Manager for the FWD Company, reports that the roads in Syria are fairly good, and the distances short. There is one positive exception to both of these observations; that is the trans-desert traffic. There the distances are long and there are no roads, as shown in the accompanying photo.

These extreme contrasts in conditions result in extreme contrasts in types of cars used. Thus the two most popular FWD trucks in Syria represent the extremes of the FWD line; one the HS, the lightest truck the company makes, and the other the MX6, a huge six-wheeler, with drive power on all six wheels, the largest model of the FWD regular series.

On account of desert dangers, Syria is very strict in the enforcement of load regulations. Overload is guarded against constantly. When a vehicle is offered for licensing, it is put onto a scale and weighed; the difference between the total vehicle weight, empty, and gross capacity, declared right then and there, is made available for pay-load, and that pay-load restriction is scrupulously enforced.

●

S.A.E. Discusses and Tests 1935 Cars

A LARGE delegation of members of the Society of Automotive Engineers, including several representatives of Detroit and other automobile factories, met in New York City last month to hear an able discussion of the engineering features of 1935 cars led by Harold F. Blanchard. The same group then gathered at the Glen Curtiss Airport where nearly all of the 1935 models were put through their paces in an improvised "proving ground" test or demonstration, during which S.A.E. members drove the cars to gain first-hand impressions of their performance.

Following Mr. Blanchard's description of many important design features of current models, there was a lively discussion of these, and questions were answered by the factory representatives. The latter included Henry M. Crane and W. J. Davidson of General Motors; M. E. Kane and V. W. Helard, representing the Ford Motor Co.; E. M. Rice and C. M. Bouts of the Chrysler Corp.; R. G. Marr & C. F. Worfolk of the Hudson Motor Car Co.; C. E. Anderson of the Packard Motor Car Co.; and S. I. McGrath of the Auburn Automobile Co.

As in a similar meeting last year, much of the discussion hinged around suspension systems with the independently-sprung types warmly defended by General Motors advocates and more or less conventional leaf-spring types having comparatively soft front springs, favored by Chrysler and some other advocates. It was even intimated by a representative of one maker of both forms of suspension that the independent type would now be out entirely in cars of this make, partly because of high cost, except for a large investment in tools for producing that type. On the other hand, there were words of commendation spoken for the new Studebaker and Packard independent suspensions as well as for the forms used by General Motors.

Among the points of design criticised by various discussors were: poor visibility in some body designs, presence of carbon monoxide in the exhaust, failure to provide better streamline forms, lack of an oil filter on some cars, difficulties involved in jacking and tire changing, inaccessibility of batteries and failure to provide more spacious bodies or to make better use of space within the chassis length for carrying purposes.

Items which were commended in current models included better riding qualities with both conventional and independent suspensions, the use of over-gears at high speed, weight decreases effected in certain cases, use of the "Turret" top, application of superchargers to boost power with very little weight increase, improved steering, freedom from vapor lock troubles, elimination of free-wheeling on most cars and the use of clutches with lower throw-out pressure.

Herbert Baxley acted as chairman of the meeting, which is the last technical session of the Section scheduled for the current season.

●

50 New Trucks in Burns Coal Fleet

NEW YORKERS had occasion to be "truck-conscious" one day last month, when 50 brand-new, big Mack coal trucks, extending in single file over eight city blocks, rumbled up Broadway on a one-day tour that took them through every main avenue and street in the city.

The big parade was staged by Burns Bros., one of the city's leading coal dealers; its purpose being to inform the public at first hand, that through the purchase of 50 new trucks, Burns Bros. was prepared to render even better service to the consumer, and was doing its share to bring back prosperity.

Big 14-yard Mack high-lift dumpers, fuel-oil tankers and short-wheelbase Traffic Type dumpers were included in the approximately half a million dollars worth of truck equipment on parade.

• NEWS of the TRUCK INDUSTRY •

Much Active Buying in First Quarter

ACTIVE buying throughout the country of motor transport units for industrial, mercantile and agricultural uses is reflected by a comparison of sales of truck and commercial car units in the first quarter of 1935, with sales in the same period last year. . . . Although complete figures were not available at the time of our going to press, latest registration figures show a marked increase in sales of trucks, buses and other commercial vehicles over the first quarter of last year.

•

McAllister Now Heads IHC

THE board of directors last month received and reluctantly accepted the resignation of Addis E. McKinstry as president of the International Harvester Company. . . . Sydney G. McAllister, previously first vice-president, was elected to succeed Mr. McKinistry as president. . . . Mr. McKinistry's ill health prevented him from carrying on as president, but fortunately, however, he will remain as a director.

•

Passenger-Car Diesel Soon Ready

AT the time of our going to press with this issue, final tests were being run on the new passenger-car Diesel engine developed by the Cummins Engine Company, Columbus, Ind. This is a six-cylinder job having a bore and stroke of 3¾" x 5". The first of these engines will be mounted in a current model passenger-car of prominent make, and negotiations to supply chasses and bodies for the Diesel passenger-car are practically completed, according to factory officials.

•

Federal Enjoys "Largest Month"

SHIPMENTS of Federal trucks reached the highest total during April of any month since March, 1930, according to J. F. Bowman, vice-president in charge of sales. He also reports a very satisfactory increase in truck shipments during the first four months of 1935, in comparison with the corresponding period of 1934, the totals showing an increase of 25 per cent over 1934 figures.

IHC Announces Personnel Changes

A FACTORY announcement concerning International personnel changes, reveals the following: Maurice F. Holahan, heretofore vice-president in charge of domestic sales, was elected first vice-president. . . . Fowler McCormick was elected second vice-president and will continue to have charge of foreign sales. . . . Chas. R. Morrison, heretofore director of domestic and Canadian sales, was elected vice-president and will be in charge of domestic and Canadian sales. . . . John Morrow Jr., heretofore manager of the purchasing department, was elected vice-president and will have charge of purchasing, traffic and fiber.

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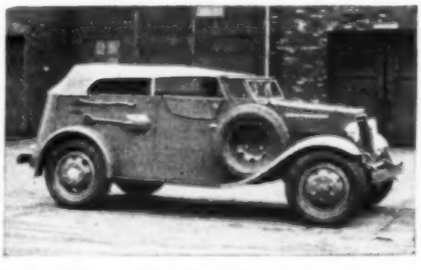
Something New for the "Cops"



HERE is a new type of police scout car that drives through all four wheels. It is ideally adapted to military as well as police service, we're told. The illustration, we hope, will give you an idea of the general appearance and special armored construction. Marmon-Herrington made it, and several of them are now in use and are giving satisfaction. The address? Indianapolis, Ind.

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G. M. Fleet Sales Have "Biggest Month"

SALES for April, reported by General Motors Fleet Sales Corporation (the General Motors subsidiary that handles the sale of General Motors cars and trucks to large national fleet users) exceeded any single month in the history of this division. . . . This follows a record year in 1934, which was the biggest year for the organization, in which all previous year's sales records were broken, C. E. Dawson, president, states.

International Truck Sales Increasing

THE two truck plants operated by International, at Ft. Wayne, Ind., and Springfield, Ohio, states W. F. McAfee, sales manager, have been working at full capacity for months, filling orders for the new streamlined International trucks. Particular interest is being shown in the 1½-ton Model C-30, the price of which is now $595 for the 133-inch wheelbase chassis, f. o. b. factory, Mr. McAfee states. International now has 230 branches and service stations and almost 4,000 dealers.

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April Biggest Dodge Truck Month

DOMESTIC shipments of Dodge commercial cars and trucks for April reached the highest monthly figure in the Company's history, by totalling 6,845 units. The highest previous monthly record of Dodge truck shipments was that of April, 1926, during which 6,791 commercial cars and trucks were forwarded to points in the U. S. The new Dodge truck plant addition, in Detroit, will soon be completed.

•

Budd Gets Autocar Order

THE Edward G. Budd Manufacturing Company recently announced receipt of an order from The Autocar Company, Ardmore, Pa., for the production of dies and stampings for the cabs of the new streamlined Autocars. Production was to have started immediately.

•

Zorniger Assistant Adv. Mgr.

APPOINTMENT of F. E. Zorniger as assistant advertising manager of Chevrolet Motor Company, with hearquarters in Detroit, was announced recently by C. P. Fisken, advertising manager. Mr. Zorniger joined Chevrolet twelve years ago, serving in several successive sales executive capacities. . . . Lots of success, Mr. Zorniger!

•

Ford Restores $6-a-Day Wage

THE Ford Motor Company last month announced the restoration of its $6-a-day minimum wage, which is back to the Ford wage level of 1929. All employees receiving the previous minimum of $5 will be raised to $6, an increase of 20 per cent, and many of the wage brackets above the new minimum will be given hourly rate advances from five cents upward. The average wage paid is now considerably above $6, it is stated.

•

Fostoria Takes Over "Tight Seal"

THE Fostoria Pressed Steel Corporation has recently acquired exclusive manufacturing and selling rights for Blue Rock Tite-Seal products. These consist of plastic materials for sealing machined joints, for gaskets of all types, for auto tops, drip-mouldings, and all other types of joints. Catalog sheet sent free on request.

THINK OF IT!

ALL material listed on this page has been personally selected and is recommended by your Editor. Executives of automotive fleets may obtain any or all of them by marking the numbers on the coupon below. You have our assurance that this will not obligate you in any way. And, when we say that this material is hand-picked, we mean . . .

HAND-PICKED!

230. **Simplified Truck-Cost System.** When we say it's that, it's just *that*, and nothing else. . . . A leading truck manufacturer has recently designed a new, simplified truck-cost system, using only *two* forms—a daily record and a monthly one. . . . Of course, each form is made out individually to cover each truck, and we will tell you frankly that it was designed particularly for the *smaller* fleet operator, with not-so-many units in his fleet. . . . This system is now being distributed to readers of FLEET OWNER, without cost, obligation or salesmen. . . . When sending us the coupon on the bottom of this page, include Number 230, if you'd like to get a book of these forms—enough for an entire month. . . . If you'd like enough for a year, perhaps we can get that for you, too.

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231. **What Every Fleet Owner Wants to Know.** There is the title, the rest of it being "about the proper care of Spark Plugs". . . . This is a 20-page book that really tells you things you "want to know." . . . *We* know that during the past several years many changes have taken place in the field of automotive engineering and designing. . . . Trends and principles that were "standard" a few years ago are today old-fashioned. . . . The book outlines these, and also gives a simplified explanation of the Heat Range System, Selecting the Spark Plug, Servicing Spark Plugs, Testing Spark Plugs, etc. . . . And there's only a couple of pages of advertising in it, the rest of it being good, meaty, everyday information. . . . A copy will be *mailed* to you if you mention Number 231 on our coupon; Brother Fischer assures you of that.

232. **Piston Replacement?** Instead of scratching your head, wondering which type of piston to use on your next motor overhaul, it might be well to read this latest pamphlet, telling all the things you would like to know about alloy pistons. . . . It covers such subjects as: T-Slot Types, Cam Grinding, Lo-Ex Alloys and the new Alumilite Finish. . . . Of course it's put out by the folks who would like to see you use aluminum pistons, which is fair enough. . . . Everyone should read *both* sides of the piston controversy—this is one of them. If you want a copy ask for Number 232, and we'll see that they *mail* it to you, free.

•

233. **More About Pistons.** Since we've always enjoyed the reputation of being fair-minded, it is only fitting and proper that we give you something concerning the "other side" of the piston story. . . . This is a pamphlet on cast-iron pistons, the title being *"Facts About Tin-Plated Pistons."* . . . We are giving you both sides, so that like in choosing one of Ziegfeld's chorus gals, you can "shut your eyes and take your pick." . . . Number 233 is the designation for *"Facts About Tin-Plated Pistons."* . . . And it's free for the asking, like other stuff on this page.

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234. **Foreign Bodies in Oil.** Here's another one of these "technical bulletins" that is not so "technical" after all, since even *we* can read it without wondering what it's all about. . . . If you have been staying awake nights wondering whether that sludge you found the last time you dropped an oil pan, was 600-W, cup-grease, or the graphite you used in the motor oil, this bulletin will attempt to set your fears at rest. . . . It's not *their* fault if your crankcase looks more like a rear-end, the graphite people tell us. . . . You might believe that "all is gold that glitters" but they want you to understand that "all is *not* graphite that is black." . . . In brief, that's what this bulletin tries to tell you, in addition to giving an interesting description of what crankcase sludge really is. . . . Number 234 on our coupon brings you a copy, via the postman, free and quickly.

•

235. **The Ideal Brake Lining?** There is only one place where you will find the ideal frictional material, says a prominent brake lining engineer, and that is on the wheels of the chariot of Jesus Christ. . . . He goes on to tell us about *his* new type of brake lining, which is as near to the ideal as modern manufacture has thus far permitted, so he says. . . . It's an entirely new product and it's a combination of woven-and-moulded; in this case the compounding material is *woven* into the lining, in the form of thin strips. . . . He calls it "woven and compressed" which probably is a better description. . . . At any rate, we feel that you should know about it, since it's brand new. . . . If you mention Number 235, we'll try to get them to send you a small sample showing various stages of manufacture—or at least some literature that will tell you about it in detail. . . . No cost, and no high pressure salesmanship, either!

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236. **What! No Uniforms?** Several fleet men found our article on Uniforms so interesting last month, that they asked us to get them a catalog. . . . Always obliging, we sent them *two*, instead of one, since we're the type that passes the pepper, too, when one asks for the salt. . . . These catalogs have been especially selected because they cater to fleet users. They offer a wide variety of *summer* uniforms in sensible and durable fabrics. . . . If your old uniforms are wearing out, if your drivers never wore uniforms, or if you're just curious, you may get free copies of these catalogs, without obligation, by mentioning Number 236 on our coupon below.

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237. **Something for the Tire Man.** Most fleets have one or two men who do nothing but look after tires. In the smaller fleets, the tire man has other duties. . . . A new, handsome catalog has recently been published by Schrader that illustrates and describes all of the Schrader "Airline" products, which means tire valves, valve-cores, valve caps, chucks, gauges and various tire-servicing equipment. . . . In order that the tire man of every fleet may have one, we are glad to mention it in this department. . . . Remember, it's free and may be secured by mentioning Number 237 on the coupon below.

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238. **New Treads for Old.** Most everyone has been talking about Retreading during the past few months, according to the many inquiries which our Editorial Department has been receiving. . . . The best way we can answer these is to send you literature covering a popular method that is available in over 120 key cities in the United States. . . . This literature illustrates and describes the particular retreading method used by this organization and gives you a swell idea of the possibilities (and costs) of retreading the tires on *your* vehicles. . . . Ask us to send you this literature—you don't have to ask us to refrain from sending a salesman, as all of this comes by *mail* and Uncle Sam's employees do *no* selling, you know. . . . Number 238 brings the retreading literature—that is, if you use the coupon herewith.

The Editor, FLEET OWNER, ...1935
90 West St., New York, N. Y.

Kindly send me without cost or obligation the following literature mentioned in the June issue. (Order by number. Nothing will be sent unless firm name is given)

.....

.....

Name of Fleet .....

Address .....

City and State .....

Your Name ..... Position .....

Number of Vehicles Operated .....

READER SAY-SO

(Picked at Random from The Editor's Mail-Bag)

"Best" Means "None Better"

"TO the Editor: I am enclosing card for renewal subscription to your valuable publication, FLEET OWNER. The information contained in this magazine is the best that I have been able to get hold of in a number of years."—*W. H. Brown, Shop Supt., Department of Highways, Suffolk, Va.*

●

This IS Cooperation!

"DEAR Mr. Fischer: I have received your magazine for several years and am pleased to inform you of my new connection with the firm below. I think that your publication, because of the way you handle it, is very helpful to any fleet operator. Please note the change in address and I assure you that I will be glad to help in any way I can."—*R. F. Hardin, Wilson & Company, Kansas City, Kansas.*

●

Non-Truck Man Subscribes!

"TO the Editor: As I am *not* in charge of the trucks of our Company at the present time, I am enclosing my check in payment of a year's subscription to your very interesting and instructive magazine, FLEET OWNER. . . . I am taking this means of assuring myself of the pleasure and instruction derived from receiving FLEET OWNER regularly. . . . I have also passed your circulation card on to the man who *is* in active charge of the trucks now in service here." —*R. E. Angerstein, c/o Phelps-Dodge Company, Jerome, Ariz.*

●

Short and Sweet

"DEAR Editor: Here is your post-card back, properly filled out. I would like to continue receiving your magazine, FLEET OWNER, as I find it most interesting."—*Chas. J. Kamper, Gen'l. Mgr., C. J. Kamper Grocery Co., Atlanta, Ga.*

"A Splendid Magazine"

"DEAR Mr. Fischer: Enclosed is your post-card, properly filled out. I appreciate FLEET OWNER very much and think that every fleet operator should avail himself of this splendid magazine." —*Orville Halling, Marigold Dairies, Rochester, Minn.*

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From a "Constant Reader"

"DEAR Mr. Fischer: We are constant readers of your magazine, FLEET OWNER, and appreciate the helpful items which appear therein from time to time." —*C. F. Coons, Owner, Standard Drive-It-Yourself System, St. Joseph, Mo.*

●

Stamp of Approval

"DEAR Mr. Fischer: I wish to take this opportunity to congratulate you on your magazine FLEET OWNER, which we receive regularly. It is full of good, useful information from cover to cover."—*E. P. Kelly, Supt. of Transportation, Puget Sound Power & Light Co., Seattle, Wash.*

●

He Reads Our "Column"

"DEAR Mr. Fischer: Being a constant reader of your magazine, FLEET OWNER, and enjoying every issue, I read in your 'Stripping the Thread' column of the April issue, about a booklet entitled 'Thou Shalt Not Kill.' I should like to get a copy of it."— *C. E. Yeatman, Purchasing Dept., Prudential Insurance Company, Newark, N. J.*

Some Nice Comments:

"I CONSIDER FLEET OWNER one of the most valuable books received."—*T. N. Rauch, Secy., Kohlmann Bros. & Sugarman, New Orleans, La.*

"Would not be without my copy of FLEET OWNER."—*T. R. Culver, Night Mechanic, Public Service Co. of Colorado, Boulder, Colo.*

"FLEET OWNER is a wonderful magazine."—*P. A. Weyler, Asst. Mgr., National Refining Co., Peoria, Ill.*

"We hold FLEET OWNER in the highest regard."—*J. R. Chambers, Stock Keeper, Champion Coated Paper Co., Hamilton, Ohio.*

●

Who Else Wants One?

"TO the Editor: By all means let us have the 'index' on past issues of FLEET OWNER, which you mentioned as a possibility, in your May issue. . . . Our files go 'way back when' and we would appreciate very much the proposed index."—*Will Temple, Asst. Mgr., Saunders Drive-It-Yourself System, Nashville, Tenn.*

●

May We Correct You?

"TO the Editor: We would like to get a copy of the summary on Brake Maintenance. We operate a small fleet of passenger cars for hire, without drivers, and are very much interested in this subject. We did not participate in the questionnaire because we assumed our fleet was too small to be averaged in with such large ones." —*R. L. Rewey, Rewey-Rent-A-Car Co., Springfield, Ohio.*

(EDITOR'S NOTE: *All fleet operators are cordially invited to participate in our Question-of-the-Month Club; both large fleets and small ones. Size of fleet has no bearing on these questions and we welcome everyone into this "club."* —*H. C. F.*)

JOHN LAW SEZ:

Recent Court Decisions and other Laws as Reported by American Trucking Associations, Inc. and The American Petroleum Institute

MAINE

"Port-of-Entry" Law Enacted

A PORT-OF-ENTRY Law with new wrinkles in it has been enacted by conservative Maine.

It provides for six ports, to which any truck operating within the state may be sent by a highway patrolman to check the weight. All trucks coming into the state, of course, must be weighed at the ports before entering.

The weight carried by the vehicle will be checked against the registered weight. If the truck is not overweight, clearance certificates will be issued and it will be permitted to proceed. If the weight carried is greater than that registered, however, the registration fee will be increased in proportion. — *American Trucking Associations.*

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NEBRASKA

Oil Dealer "Rebels" At Gas Taxes

FOR four years a Lincoln, Nebraska, oil dealer, has been complying with the state law that prohibits gasoline stations from informing the public regarding the motor fuel tax, but when an increase in the gasoline tax was proposed, he rebelled.

He erected an eight-foot sign at his gasoline station near the state capitol, showing the price of gasoline, the tax, and the total. Underneath were the words in large letters "Protest Advancing Gasoline Taxes!" He also used newspaper advertising space to urge tax reduction.

This dealer asked his customers what they thought of higher taxes, and discovered that six out of seven were unaware that they paid a tax. The taxpayers' revolt thus inaugurated was not successful in thwarting the increase, but it did force adoption of an amendment limiting the life of the higher tax to July 1, 1936, or as soon as adequate revenues are available from other sources. —*American Petroleum Institute.*

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NEW JERSEY

PWA Trucking Contract Cancelled

C. O. GREASON, secretary of the New Jersey State Code Authority, last month announced cancellation of a PWA trucking contract held by an operator who failed to comply with the Code.

The Code Authority also succeeded in making another operator, holding a Federal contract, to comply.

As a result of this action, Mr. Greason stated in a letter to NCA headquarters, 108 dump and flat trucks, and 39 regular vehicles have been registered under the Code.

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NEW YORK

More Action in Code Violation Cases

THE Trucking Code's compliance machinery caught up with another operator last month. In addition, hearing was heard in one case and a bill for injunction was filed against another operator.

The vice-president of one large van company in Syracuse was arrested and held in $1,000 bail. The indictment covered 15 separate counts. Twelve covered the wage and hour provisions of the Code, one was for failure to register, and one for violating the President's order forbidding dismissal of employees making complaints against the employer.—*American Trucking Associations.*

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OHIO

P. U. C. Raises Coal Rates

IN the face of a threat by coal operators to move their coal by truck, the Ohio Public Utilities Commission last month approved increased intrastate rail freight rates on coal.

The increases, which approximate eight per cent, make the Ohio rates conform with those of the Interstate Commerce Commission on interstate shipments, effective June 1.—*A. T. A. Bulletin.*

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WISCONSIN

Another Anti-Truck Measure—Fight It!

ONE of the most severe anti-truck measures ever introduced in a state legislature—one which would be a likely rival for the notorious Texas 7,000-pound law—has been offered in Wisconsin.

Introduced by a "railroad assemblyman," according to the Wisconsin Trucking Association, the bill, if enacted, would make it difficult, if not impossible, for many operators to continue in business. Among other things, it would:

Prohibit additional contracts for contract carriers; increase the mileage taxes sharply through the weight range; limit truck drivers to 200 miles per day; prohibit trucks from operating between 5 o'clock Saturday morning and 3 o'clock Monday morning; force private carriers to carry the same insurance as for-hire vehicles; limit the agricultural exemption from the mileage tax to trucks operating within 15 miles of the point of production; increase the private carrier fee to $5 for one truck, and $10 for each additional; and extend the mileage tax exemption for trucks under 6,000 pounds to contract carriers operating within a 15-mile zone.

With the long-awaited railroad bill offered, the Wisconsin Association is girding for battle. Operators who are not members are being urged to join with it in fighting a common enemy—the drastic regulatory measure.

Several other important bills are pending consideration in the Wisconsin Legislature. One would reduce gross weights after May 1, 1940, to 12,000 pounds for a single unit or combinations. Another would limit all permits for special hauling to provide that such transportation be to and from nearest railroad point only. It also would forbid municipalities to rent or lease public-owned trucks for private work. Still another measure would license mechanics and helpers.

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PENNSYLVANIA

Gasoline Tax Evaders Punished

TWO Pennsylvania men, convicted of evading the state gasoline tax and of blending kerosene with gasoline, have been given fines and jail sentences recently.

A member of the State Highway Patrol who took samples of the gasoline offered for sale at a filling station said that the analysis revealed kerosene had been blended with the motor fuel, resulting in evasion of the tax payment on that portion of the blend made up of kerosene.

As an indirect result of this action, a refinery which had lent its liquid fuels permit to the two men, who were also found guilty of operating without the required permits, was fined for this procedure.—*American Petroleum Institute.*

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VIRGINIA

City Wins Taxi Rate Test Case

THE right of a city council to prescribe minimum rates for taxicabs in Lynchburg, Va., was asserted recently in a decision handed down by the Corporation Court.

Upholding the council in a test case brought by that city against a taxicab fleet operator, the defendant company was fined five dollars and its license to operate was suspended for five days.

For ROAD and SHOP

(Some are New; Others Not)

New Diesel Starting Batteries

TO provide adequate voltage characteristics for starting Diesel engines with the required high cranking speed, The Electric Storage Battery Company, Philadelphia, Pa., have

developed a new line of batteries particularly designed for high currents up to 1600 amperes at low temperatures.

Considerable study has been given to the construction of these batteries to make them of maximum durability with minimum size and weight conducive to long dependable life. For example, extra-heavy, flexible, lead-plated copper connectors are used between cells to eliminate possible breakage from vibration or expansion due to temperature. Likewise heavy-duty, hard rubber, monobloc containers are used to withstand hard usage.

Several types and sizes are available for meeting the requirements of various engine sizes from 25 to 600 horse power where the required voltage varies from 12 to 115 volts and the current from 300 to 1600 amperes. These batteries are designed and constructed for truck, tractor, bus, road construction machinery, streamlined trains, locomotives, as well as for stationary engine service.

Since each type and size of engine represents a different problem it is suggested that advantage be taken of free engineering service of The Electric Storage Battery Company on the proper selection of a battery. You are invited to write for further details.

•

New Safety Book Offered Free

BEARING the title *"Thou Shalt Not Kill!"* an unusually interesting book on safety has just been issued by The Travelers Insurance Company, Hartford, Conn. Replete with accident statistics, photographs and cartoons, the book is virtually an encyclopedia on the subject of motor vehicle acidents. One glance at it, and you'll want a copy for your files or for use in connection with your safety work. Copies will be furnished, free, as long as the supply lasts. If you write to the Editor, we'll see that one is sent to you at once, without obligation.

•

Binks "Touch-Up" Outfit

A NEW, handy Touch-up Outfit which includes the Thor Model 5 Spray Gun, with its new, easily adjustable nozzle head, has been announced by the Binks Manufacturing Company, 3106-50 Carroll Avenue, Chicago.

The new outfit can be used in manufacturing plants, refinishing rooms, and paint shops for light spray work, shading, and retouching finished products and for touching-up repaired spots on car, truck or bus bodies.

Extra cups of aluminum or glass are furnished as desired and are provided with seal-tight covers. This enables the operator to have a wide range of colors ready for use at all times. No time is lost waiting to mix colors or clean cups.

Outfit is furnished as shown with 15 feet of light-weight air hose with connections, 6 extra containers, and a light but durable tray for holding and carrying the entire outfit. The new outfit is known as the Binks Touch-up Outfit No. 5. When writing for further details, mention of FLEET OWNER will be appreciated.

•

New Bulletin on Oils

A NEW bulletin (No. P40) is issued by Acheson Colloids Corporation, Port Huron, Mich. It's entitled *"Foreign Bodies in Oil"* and the subject material deals with crankcase analyses and deductions relative to sludging. If you are interested in the causes of oil contamination (and you should be), write Acheson for a free copy. Mention of FLEET OWNER will help.

•

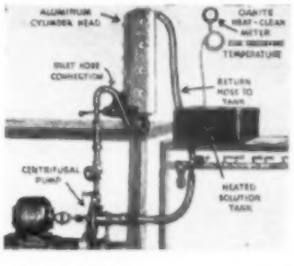
Radiator Cleaner for Aluminum Heads

FLEET operators having cars with aluminum heads, such as Ford, etc., should use radiator cleaners that are not harmful to the aluminum of the cylinder heads. Ford service data, in fact, warns against the use of anything in the radiator that will harm the head. Strong alkalies must be avoided; they pit and affect aluminum surfaces.

In this connection, Oakite Products Company has developed a cleaner especially for the purpose, and before presenting it, conducted several tests in their laboratories, in which a cylinder head made of aluminum alloy known as S. A. E. No. 33 was used.

During each of the tests, observations were made of the time the different Oakite solutions were circulated, make-up of solution, temperature of solution, weight loss of cylinder head, if any, and the condition of the water-jacket surfaces. After five test-runs, there was practically no weight loss—less than one gram, we are told, which was attributed to the removal of some foreign material, possibly core binder.

Inspection of the water-jacket surfaces showed them to be hard and firm and of unchanged surface structure and only a shade darker than the outside surfaces. The tests in-



dicate, it is claimed, complete safety in using Oakite cooling system cleaners designed especially for this purpose, further details of which will be sent on request. Address Oakite Products Company, 52G Thames St., New York City. Mention of FLEET OWNER will be appreciated.

Quick-Acting Floor Cleaning Material

A NEW material, especially designed for removing oil and grease from garage and service station floors is said to materially reduce the amount of brushing required even when floors are badly dirtied.

FLOOR CLEANING

Dissolving completely in either hot or cold water, the strength of the solution used can be varied to meet individual conditions. Because of the penetrating qualities of the material, low concentrations are ordinarily all that are required.

The makers, Oakite Products, Inc., 52G Thames St., New York, N. Y., report that the material is pleasant to handle and gives off no objectionable fumes. The same material is also used for cleaning motors, chassis, repair parts and radiator cleaning. When writing for details, mention of FLEET OWNER will be appreciated.

●

World Bestos Brake Lining Plan

DESCRIBED as "unique, new and complete," the World Bestos Corporation's new loose-leaf catalog, recently issued, contains much information covering "Grafild" brake linings and "prescribed" friction sets.

GRAFILD
Brake Linings

Moulded-Woven
Semi-Rigid-Moulded
Flexible-Moulded
Standard-Woven
Heavy-Duty-Woven
Prescribed-Friction
Shim-Material

WORLD BESTOS CORPORATION,
Paterson, N. J.

World Bestos has a new brake lining plan for fleets. You simply file a list of your vehicles with your jobber on a special blank. A copy is sent to the factory and an engineer then prescribes the *exact* friction lining for each shoe of each brake—just like your doctor prescribes the right medicine for each ailment.

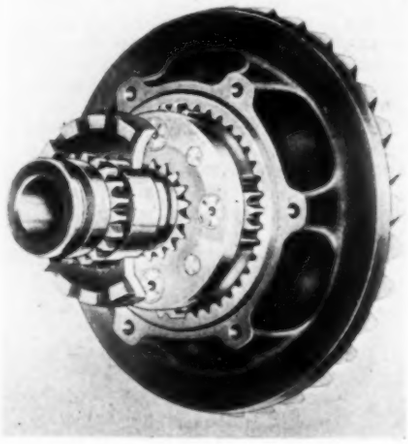
If you'd like to eliminate guesswork in the future, so far as brake lining is concerned, we'd suggest that you start by writing for a copy of this free catalog and further details. Address: World Bestos Corporation, Paterson, N. J. Mention of FLEET OWNER will help all of us.

●

2-Speed Axle for GMC 1½-2 Tonners

GENERAL Motors Truck Company announces that a dual performance rear axle is now available for GMC 1½-2 ton trucks. This new feature, introduced several months ago on the GMC T-18 trucks in the two to three ton range, permits a lower gear ratio and more pulling power with a marked saving in gas and oil consumption and considerable less wear-and-tear on the engine and other driving units, it is claimed.

The special design of the dual performance axle provides for a simple planetary reduction gear assembled



between the oversize bevel gear and the differential, and is controlled by a shift lever installed in the cab. A simple movement of this lever enables the driver to change instantly, under any operating conditions, to the low or high speed range, it is stated.

The net result, according to General Motors Truck engineers, is the more effective use of power. The dual performance axle permits greater speed with fewer engine revolutions, gives better performance on hills and makes starting of heavier loads easier. The truck is able to do more work, resulting in a considerable saving in a year's time, it is claimed. Detailed literature is now available. Address General Motors Truck Company, Pontiac, Mich., and if you mention FLEET OWNER it will please us greatly.

●

duPont Offers "Pro-Tek"

A NEW vanishing cream which forms an "invisible glove," protecting the skin against dirt, paint and grease, has recently been announced by the Finishes Division of E. I. du Pont de Nemours & Company, Wilmington, Del. The new du Pont product, which is known as "Pro-Tek," is not a soap, but a cream compounded primarily for protection, and it is claimed to be entirely harmless and non-irritating to the skin.

The cream, when rubbed on the hands, apparently disappears, leaving them dry and free from any feeling of stiffness or greasiness. It is being widely adopted by plant physi-

cians and executives for use by mechanics and factory workers, and is also filling a new need for painters, garage mechanics, service station attendants, etc.

When finished working, all the dirt, grease, paint and grime can be washed away with running water, leaving the skin soft, clean and healthy, the makers state.

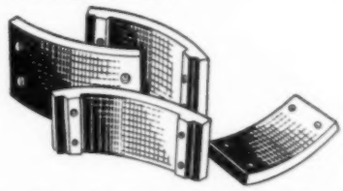
"Pro-Tek" is being offered as one of the No. 7 Line products, through drug stores, hardware and paint stores; also jobbers and dealers.

●

Amco Curved Shoes and Blocks

IN the Amco method of brake lining manufacture, the composition may be varied to secure any desired frictional coefficient, degree of flexibility or non-compressibility, without sacrifice of mechanical strength, dependability or long life, the makers state.

Amco linings are available in a variety of styles, types and sizes, the curved shoe and block type being illustrated here. Some of the features of Amco brake blocks, as pointed out by the maker are:

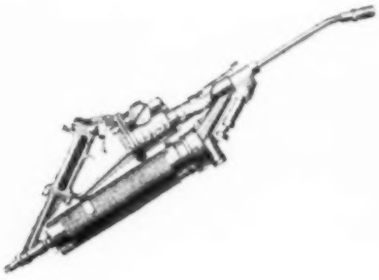


1. Heavily impregnated with frictional compounds on a strong fabric base of woven brass wire and asbestos yarn. Compressed into a dense homogeneous mass which resists oil, water and heat. . . . 2. Great tensile strength and mechanical sturdiness to resist frictional heat and severe shock. . . . 3. Uniform braking ability throughout the life of the material. . . . 4. Available with varied frictional properties to meet demands of different weights of vehicles and different types of brakes.

Further information concerning this product may be obtained from Asbestos Manufacturing Co., 510 Sabine St., Huntington, Ind. Mention of FLEET OWNER is always helpful.

"Featherweight" Grease Gun

THE United States Air Compressor Company of Cleveland announces their new "Featherweight" one-pound grease gun. The detachable grease barrels can be snapped on and off with ease, it is claimed.



One of the features of this gun is that the minute you change magazines and press the trigger, there is an instantaneous release of new grease. In other words, a change of magazines means immediate change of grease—no old grease left in barrel or nozzle of gun. Another feature is the high and low pressure adjustment which eliminates the danger of ruining fittings equipped with Welsh plugs. A grease pressure of 2,000 pounds or over 10,000 pounds is available by simply turning screw adjustment on end of barrel.

The valve in this gun is pneumatically operated and will not stall on dead center, the makers state, and that the heaviest greases in cold weather can be handled without any trouble. The new gun weighs only 6 pounds, and is well balanced, allowing you to reach Zerk or Hydraulic fittings without the use of a whip-end or Tee-handle. Such are the claims of the makers, who will be glad to send complete details, without obligation.

New Trouble Shooting Book

BECAUSE of the demand for information on motor tune-up, high-speed ignition, motor testers, fuel pumps, gas analyzers, auto radio noise prevention, etc., these subjects have been included in an advanced edition of A. H. Packer's book, *"Electrical Trouble Shooting on the Motor Car and Airplane."*

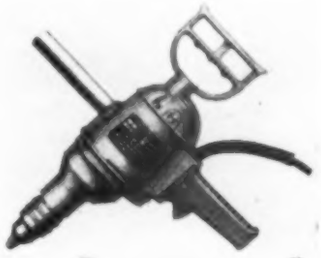
This new material, which comprises 11 chapters and about 90 pages, includes such interesting features as instructions on building a condenser-tester out of radio parts, determining condenser size by study of the interrupter contacts, determining engine operation by condition of spark plug insulator, and other similar items.

With this advanced material, the book still includes fundamental instruction on wiring, generators, Starters, battery ignition, magnetos, voltage regulators, test benches, storage batteries, armature and field testing and headlamp focusing. The book is suitable for self-instruction of the automobile mechanic, or as a reference book for the expert.

It contains over 600 pages, is 5½ inches by 8½ inches and has a flexible, imitation leather binding. Price $4.00. Published by A. H. Packer, 8115 Harper Ave., Chicago, Ill. Sold through FLEET OWNER, 90 West St., New York City.

New Half-Inch Electric Drill

A NEW half-inch standard-duty portable electric drill has recently been announced by Signal Electric Mfg. Co., Menominee, Mich.



It is known as Type OB-5 and the manufacturer points out that it is durable, light in weight and has the proper power, speed and is mechanically and electrically correct.

This drill has the breast-plate type of handle with detachable pipe handle; trigger-type switch, with lock for continuous operation; 12-feet of rubber-covered cord and rubber plug. Housing is of durable aluminum alloy. Ball bearings are used throughout. Available in 110 and 220-volt types.

●

New Synthetic Rubber-Like Product

THE properties of a new material called "Koroseal" continue to astonish the chemists and engineers of The B. F. Goodrich Company, responsible for its discovery and development.

At present the prohibitive cost of manufacturing Koroseal precludes its adoption as a general substitute for rubber but some of its characteristics render it far superior to rubber for certain specialized applications.

Although not the same as rubber in chemical composition it may, like rubber, be varied by compounding methods from very hard to soft, doughy consistency and can be molded into any shape. Koroseal can be produced, also, in a variety of colors. It is odorless.

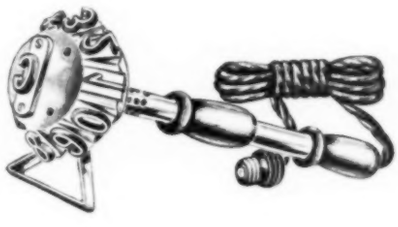
The resistance of Koroseal to swelling when exposed to many oils and greases and to disintegration in the presence of corrosive chemicals is unusual. It even resists the action of chromic acid and hot, concentrated nitric acid, it is claimed.

According to J. W. Schade, Director of Research at Goodrich, Koroseal compositions possess far greater flexing life and corrosion resistance than rubber. Unlike rubber, Koroseal does not swell and soften in oils but retains its form and toughness. For oil-sealing gaskets where swelling is objectionable, Koroseal promises great advantages over rubber. Moreover, it offers great resistance to light and to oxidation.

"Koroseal will not replace rubber for general use," announces Mr. Schade, "but laboratory tests and actual field service of Koroseal indicate that it will find increasing usefulness where rubbery consistency, combined with superior resistance to many oils and chemicals or to flexing, is required."

For Branding Tires Conveniently

THIS model electric tire-numbering disc was especially designed for the tire industry and has been found valuable by many fleet operators for branding numbers into solid or pneumatic tires. A cut of the brander in use is shown here.



Numbering of tires in this manner enables the fleet operator to keep an authentic record of the entire history of each tire, including such items as performance, mileage, costs, etc.

The disc has one-inch numbers, from 0 to 9, permitting the branding of any combination of numbers. Once the disc has been sufficiently heated, by plugging into any light-socket, the heat will be sufficient for continuous branding, if necessary.

The face (or front) of the disc has means for inserting interchangeable letters, making it possible to use code letters for identifying the ownership of the tire, etc. etc. Supplied for 110 or 220 volts. Write to The Burning Brand Company, Chicago, Ill., for further details. If you mention FLEET OWNER, it will be appreciated by both them and us.

and to avoid hard starting on each sudden drop in atmospheric temperature.

Fleet operators generally appreciate that the maximum gasoline economy and the maximum power, hill climb and acceleration cannot be obtained with a single carburetor setting. Either performance or economy must be sacrificed or compromised in a manner agreeable to the operator.

Since the starting characteristics of an engine oil are determined by the viscosity at low temperatures and the oil consumption characteristics by the viscosity at the operating temperature, the maximum in easy starting and maximum in oil consumption cannot be obtained in a single lubricant. The selection of a lubricant, unlike the carburetor setting, must therefore be compromised entirely in favor of cold starting, unless the car is kept in a heated garage and operated under unusual driving conditions.

Recently through the use of solvent extraction processes some of the refiners have improved the viscosity index of their motor oils. Viscosity index in itself is not a measure of either cold starting or oil consumption or necessarily an index of quality. However, as mentioned earlier in this paper, viscosity index is a measure of the temperature-viscosity coefficient or rate of change of viscosity with temperature; and an improvement in viscosity index from the operator's viewpoint means that the temperature range over which the lubricant can be used with comparable starting and consumption properties has been widened. If two oils are selected with the same actual viscosity at 0° F. the oil with the higher viscosity index will have a higher viscosity at the engine operating temperature and will give the better oil economy.

With oils of exceptionally high viscosity index it is possible to obtain motor oils which will meet both the 0° F. viscosity requirements of "20-W" and the 130° F. viscosity requirements of "S.A.E. 30". In other words such an oil meets both "20-W" and "S.A.E. 30" and may be used over the entire temperature range shown in Charts A and B for "S.A.E. 20-W," "S.A.E. 20" and "S.A.E. 30."

Car speed has a marked effect on oil consumption. R. E. Wilkin, in an S.A.E. paper, reported that the average oil consumption on thirteen makes of cars at 55 miles per hour was 6.9 times higher than at 30 miles per hour. This ratio varied from 2.3 to 19.8 for the individual cars. At the higher speeds a difference of only a few miles per hour may make as much difference in oil consumption as would be experienced by changing to the next S.A.E. viscosity number.

While the operator may be conscious of a difference in engine friction, resulting from a change in viscosity at low temperatures, he does not ordinarily consider the effect of viscosity on engine friction under driving conditions.

The reduction in engine friction obtained through the use of a lighter or lower viscosity oil is small but very definitely results in improved engine performance. The oil consumption may be increased from 50 to 80%, but the saving in gasoline is more than sufficient to compensate for the cost of the additional lubricant used.

The pour-point is of importance to the consumer. It indicates the lowest temperature at which the oil will flow by gravity from the oil-sump to the oil-pump inlet. Pour-point does not influence cold starting but it does determine whether an adequate supply of oil will reach the bearing surfaces after the engine is started. Practically all automobile manufacturers recommend the use of a "20-W" oil with a zero pour-point and "10-W" with a sub-zero pour-point.

Sludging and oxidation in service are properties which have been emphasized recently by a number of refiners. These may be important considerations from the operator's viewpoint but unfortunately these properties cannot be predicted from single laboratory tests. The type of oil and method of refining, as well as the physical and chemical properties of the finished product, must be considered in judging these as well as other quality properties.

During the severe winter months, especially on short runs where the crankcase oil does not reach a high enough temperature to permit the crankcase ventilator to function efficiently in preventing condensation of water vapor in the crankcase, sufficient water may accumulate to form needle ice and block the oil pump screen. High sulphur fuels under these conditions may cause crankcase corrosion. During the summer months, driving on untreated gravel or dirt roads may lead to rapid wear of the cylinder walls, rings and pistons due to excessive contamination of the crankcase oil by abrasive road dust. Under these conditions, regardless of the viscosity or quality of the engine oil, the crankcase must be drained frequently.

In conclusion, the individual car owner or the fleet operator, in purchasing engine oil should be guided in selecting the correct S.A.E. Viscosity Number by the climatic conditions and the recommendations made by the vehicle manufacturer and should use only products marketed by reliable and reputable refiners. Quality in motor oil cannot be secured through legislation; the honesty and integrity of the supplier is the consumer's best guarantee of quality.

●

Camp Holabird Boys on Industrial Tour

UNCLE SAM'S Motor Transport School from Camp Holabird, Maryland, now on an extended tour of the industrial section of the country, visited the factories of the Cummins Engine Company last month.

Numbering twelve officers and fifty enlisted men selected from all departments and stations of military service throughout U. S. possessions, the traveling military college took a brief course in Diesel engineering when conducted through the various plant units by C. L. Cummins, president of the company and designer of the engines now being used in electrical, industrial, motor transport, marine and locomotive service.

Attention was attracted to the Columbus Diesel plants by the school by the fact that one of the Cummins engines is in service at the Maryland camp. Interest in the oil burning equipment, the officers in charge of the entourage stated, was responsible for listing the local factory on the itinerary.

From Columbus the troupe continued to South Bend to tour the Studebaker factories from where the schedule led into Detroit for a study of some of the more important plants in that vicinity. The tour is an annual event which follows the regular winter training season at Camp Holabird.

Maintaining a 25-Unit Coal Fleet

(*Continued from page 22*)

just passed, and this was unusually severe in this part of the country on account of the great amount of snow, bad ice cakes, ruts, etc. This is perhaps better realized when we say that our entire operation (with the exception of one truck) is on *solid* tires. You fellows can run your truck springs dry, but we will continue to lubricate them, at least once a month, anyway.

While on the subject of lubrication, we might say that the chasses are greased monthly. Oil consumption is checked each morning by each driver, and the necessary amount of oil is replenished. This brings us to the subject of the Driver's Daily Report, a sample of which is illustrated with this article.

When the driver turns in his vehicle at the end of the day, he makes out one of these reports, which gives a record of gasoline received, oil put in, and the daily mileage. There is also a blank space for him to make a note of any service difficulties which he may have encountered during the day. These "running repairs" are attended to immediately, working nights, if necessary, during peak periods, so that the truck will lose no time out of service. This driver's report also serves as a work ticket, as the mechanic must sign it at the completion of the job.

Since, as before stated, our fleet is not very large, and our operation is quite centralized, the proper maintenance of our fleet is not such a complex problem. Since no long runs are made, and practically all deliveries are made in crowded city traffic, at city-traffic speeds, there is no abuse of the trucks, due to overspeeding. Perhaps the only objectionable features are the excessive idling of the motors, due to traffic lights, and also the frequent use of brakes, because of city traffic and lights.

To compensate for these drawbacks, we have practically no hills to negotiate. And because we use solid tires almost exclusively, we are not troubled by "flats" and our tire problem is not really a problem, except when chains are used for a considerable length of time, as they were last winter.

In conclusion, our shop personnel consists of three mechanics, one helper who also does washing, and the writer. We have a small shop and have the major items of shop equipment necessary for this type of operation, some of which are as follows: Lathe, screw-press, drill-press, portable floor-crane, engine and axle stands, bench grinder, etc., not to forget a complete oxy-acetylene welding outfit. We read FLEET OWNER regularly and are pleased to have this opportunity of "swapping" our experiences with the "other fellow."

●

Analyzing the Refinishing Trend

(*Continued from page 34*)

ment of lacquer finishes has been carried steadily forward until today one would hardly recognize the early lacquers with their flat finish of low solid content. But they did have the quick air-drying characteristic demanded and gave us a material that could be spot-repaired easily and efficiently as well as a finish that had greatly improved durability and life for outside exposure.

Pyroxylin lacquers quickly became 100% standardized throughout the entire automotive industry. Not until 1934 was there a break from the universal practise of using pyroxylin lacquers. Then Henry Ford became the first of the motor car manufacturers to introduce a baked synthetic finish.

MARMON-HERRINGTON
TRUCKS ARE MORE THAN
All-Wheel-Drives

THEY ARE ENGINEERED AND MANUFACTURED TO BE THE

BEST PERFORMERS EVER BUILT..

TRY ONE AND SEE

MAKE ANY TEST YOU LIKE

FOR SAFETY, for ability to haul more ton-miles at less cost, for better performance on or off the highway, you can't beat a Marmon-Herrington all-wheel-drive.

If you want real proof, make a test yourself. Take a Marmon-Herrington and put it up against any competitive truck of the same capacity. Judge it from any standpoint. You will find that Marmon-Herrington gives you something brand new in truck performance — something you have always hoped for. All we ask is that you drive one of the new models and get first-hand facts.

The 1935 Marmon-Herrington all-wheel-drive line is complete in every detail. It includes a full range of four and six-wheel-drive models beginning at 1½ tons.

Marmon-Herrington Company, Inc., Factory and General Offices, Indianapolis, Indiana.

MARMON-HERRINGTON
ALL-WHEEL-DRIVE MOTOR TRUCKS

NEW INVENTION *Saves Money!*

TWO-TREAD, AIR-COOLED, LOW PRESSURE TIRE FOR TRUCKS CUTS SAFE MILEAGE COST IN HALF

Cool air is drawn in here—passes through air channel in center of tread—cools tire.
Hot air expelled here. Traffic heat dissipated. Tire protected from heat destruction.
Tread No. 2 gives same long mileage—safe to the last mile.
Tread No. 1 gives long, safe mileage.

AIR-COOLED, TWO-TREADS

As the tire revolves the ventilating holes close under the weight of the truck, forcing out destructive heat. As the holes open, cool air is drawn in, cooling the tire as it rolls on the road. And these patented holes have another important function. As the first tread wears off—these holes become grooves forming the second anti-skid tread which grips and protects to the final mile.

The new Seiberling Two-Tread, Air-Cooled, Low Pressure Truck Tire reduces truck operating costs 3 ways.

TWO-TREADS—DOUBLE MILEAGE

This new tire has two treads—50% more rubber means 50% more mileage. Every mile a safe mile—because this tire never wears smooth.

AIR-COOLED—NO ROAD DELAYS

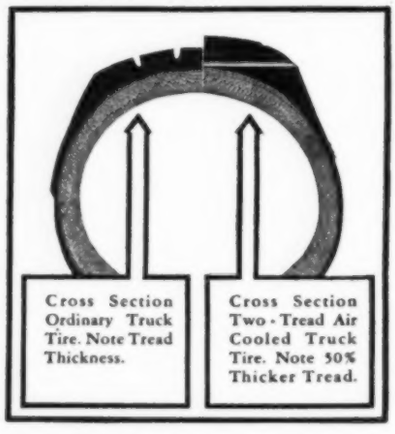
For further economy this tire is air cooled. Air is forced right through the tread—destructive heat is expelled. Blowouts and other tire failures are reduced to a minimum.

EASIER RIDING—LESS BREAKAGE LOWER MAINTENANCE

The air channels inside the tread of this new tire act as additional air cushions—reducing vibration, breakage and mechanical upkeep. Costs go down.

BRING YOUR TRUCKS UP TO DATE REDUCE COSTS

Most low pressure truck tires reduce vibration—lower breakage costs and improve truck appearance—but because of fast tread wear actually increase tire mileage costs.


Cross Section Ordinary Truck Tire. Note Tread Thickness.
Cross Section Two-Tread Air Cooled Truck Tire. Note 50% Thicker Tread.

This Seiberling Two-Tread, Air-Cooled, Low Pressure Tire for Trucks has all the regular advantages of other low pressure tires but because of the Two Tread feature doubles safe mileage and lowers cost per mile.

THE SEIBERLING RUBBER CO. • AKRON, OHIO, U. S. A.
Seiberling Rubber Company of Canada, Ltd., Toronto, Ontario

SEIBERLING RUBBER HEELS · SOLES · MECHANICAL GOODS — TWO TREAD *Air Cooled* TIRES

Fleet Men Visit J-M Factory

A GROUP of approximately 75 men who operate and maintain more than 36,000 trucks and 2,000 buses in the eastern part of the United States were guests of Johns-Manville last month, in a trip through their brake lining factory and brake testing laboratory, located at Manville, N. J.

After following the manufacture of brake lining through from the preparation of asbestos fibres to the finished product, the group spent an interesting hour in the laboratory, watching many tests devised by J-M engineers for testing their manufactured product.

One of the most interesting tests was that on the inertia machine which can simulate conditions found on the road, such as speed, weight of the vehicle, operating temperatures, etc. The machine is used in determining the life expectancy of various types of lining.

Following the inspection trip, Roy Berg, chief engineer of the automotive division of Johns-Manville, gave a short informative talk on brake lining in general, describing an "ideal" in brake lining (figuratively) so that maintenance men would know more of what to look and ask for in purchasing friction material.

Among the firms represented were R. H. Macy & Co., Inc.; United States Trucking Corp.; American Telephone and Telegraph Co.; Texas Co.; Standard Oil of New York; United Parcel Service; Mack Trucks; Autocar; Standard Oil of New Jersey; Department of Sanitation, City of New York; Dairymen's League; Sheffield Farms; Utilities Management; Consolidated Laundries; Public Service of New Jersey and many others.

•

New Refrigeration for Trailers

A NEWLY-DEVELOPED, brine-cooled refrigeration system for use in trailer bodies, has recently been announced by Fruehauf Trailer Company, Detroit, Mich. . . . It was designed for those operators who cannot afford the more elaborate types.

By means of a brine tank and pump, driven by a small gasoline engine, brine is circulated through copper pipes which run the full length of the body on either side at the roof. Aluminum radiating fins around the pipes spread the cool air evenly through the body.

Fruehauf Trailer Company, Detroit, Mich., will be glad to send you complete details. . . . You'll tell them you saw their announcement in FLEET OWNER, won't you?

•

Dayton Clarifier in New Factory

OCCUPATION of a new, larger factory is announced by the Dayton Clarifier Company, Dayton, Ohio. . . . The Company makes the Saf-T-Clarifier for motor vehicles, air-clarifiers, and extreme-pressure lubricants for special jobs. . . . Many of the country's large fleets are equipped with the Company's products, the announcement stated.

New Socony Motor Oil Process

A GAS turned into liquid under pressures of from 200 to 250 pounds per square inch plays a vital part in the new process recently perfected by the Socony-Vacuum Oil Company to provide a new kind of summer motor oil, it was announced last month.

The gas transformed into liquid as a step in the new refining process is known as propane. Stored in two huge cylindrical tanks, it is powerful enough to blow up an entire town, yet it performs a rather revolutionary development in the history of the petroleum industry.

The propane is liquefied by subjecting it to high pressures and then acts as a solvent which collects all of the valuable parts of the crude oil. Meanwhile, another solvent known as cresylic acid dissolves and settles the natural impurities present in the crude petroleum, ridding it of carbon and gum-forming elements. After the impurities have been carried away, the propane-oil mixture is permitted to reach room temperature and the propane, once more a gas, bubbles away.

The process insures, it is claimed, an oil free from weak and unstable elements which burn up with engine heat.

Road tests from Canada to Mexico in more than 100,000 miles of driving have given the new summer oil thorough practical tryouts, officials state.

Two huge plants at Paulsboro, N. J., and Beaumont, Texas, were built especially to provide full production facilities for the new process, perfected by Socony-Vacuum engineers after years of research and study on the new refining method. Chemists describe the new process as a physical one as contrasted with the chemical refining methods of filtration and acid treatment previously used. The new physical process separates the impurities from the rich lubricating oil without any chemical change in the oil at all.

•

New Driver's Uniform Catalog

NUMEROUS requests for further information, in response to our article on summer uniforms last month, prompt us to mention and describe this new catalog, recently called to our attention.

In it, the manufacturer offers a complete line of driver's uniforms, shop uniforms, expressmen's jumpers, caps, car cover-alls, etc. Besides illustrating, describing and pricing each type of uniform, actual samples of materials are included, so that selection is quickly and easily made, and misunderstandings eliminated.

This line is unusually complete and in the catalog may be found uniforms to fit every need in the transportation field—including truck, bus and taxicab operations. Laundries, dairies, bakeries and other vocational fleets have not been overlooked.

If you'd like a copy of this catalog, which will be *mailed* without cost or obligation, address Star Uniform Mfg. Company, 69 Varick Avenue, Brooklyn, N. Y. . . . Mention of FLEET OWNER is always appreciated.

Largest Ford Volume Since 1926

REFLECTING what appears to be a renewed interest among industrial and mercantile businesses in capital investment in motor transportation, truck and commercial car retail sales by Ford Motor Company dealers in the first four months of the year were reported to be the largest in volume since 1926.

Sales of both trucks and commercial car units during the first four months were approximately 85 percent greater than in the same period of 1934.

Truck sales in the first four months totalled 42,380 units, as compared with 22,910 units in the same period of 1934, an increase of more than 84 percent. Commercial car sales in the same period totalled 30,889 as compared with parallel months last year, a gain of 86 percent. Total sales of both trucks and commercial cars were 73,269 as against 39,485 in the same period last year.

Ford truck and commercial car sales in April were 20,102 units, the largest month's volume to be recorded in recent years.

•

"Normal" Car Consumption in N. Y.?

ACCORDING to C. K. Whittaker, president of the Automobile Merchants Association of New York, Inc., the Metropolitan New York sales for the first four months of 1935 totaled 39,783 units. The average for the same period of the last ten years is 39,866 units, the high being 56,464 in 1929 (abnormal in many respects) and the low being 28,681 in 1934.

Mr. Whittaker points out that the present rate of sales would seem to represent "normal new car consumption" and indicate a yearly market for the territory of well over 125,000 new passenger car units.

Sherlock & Arnold, analysts and publishers state that Metropolitan New York sales of new passenger cars for April totaled 16,111 units which is 38% increase over April, 1934. The total four-months period for 1935 of 39,783 units represents a 38¾% increase over the same period for 1934.

•

S.A.E. Summer Meeting

THE 30th Anniversary Summer Meeting of the Society of Automotive Engineers will be held at The Greenbrier, White Sulphur Springs, West Va., June 16th to 21st. As usual, Transportation will come in for its share of attention, the title of one of the papers being "What's the Destination for Motor Transportation?" Austin Wolf, well-known New York engineer, will present this subject.

•

Safety Glass for New Greyhounds

EACH of the new 208 buses recently placed into service by The Greyhound Bus Lines has safety plate glass throughout. With approximately 1,614 buses in operation throughout the country, Greyhound lines in 1934 carried more than 35,000,000 passengers in operating 42,000 miles of bus routes, a recent announcement stated.

You don't have to be LUCKY to get precision...

MODEL E-J

HALL ECCENTRIC

Valve Seat Grinder

Point contact valve seat grinding . . . smooth, fast, vibrationless . . . is obtainable only with an ECCENTRIC type Grinder. That's why it is the only method universally adopted by leading motor manufacturers for their production lines. Longer stone life and less frequent stone dressings are only two of its economy features. Ask your jobber or write us for literature.

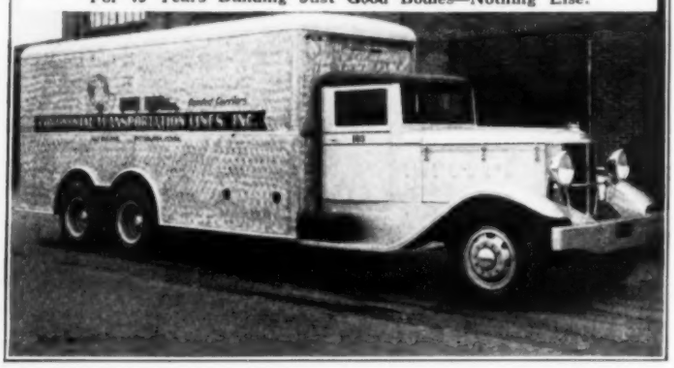
The Hall Manufacturing Co.

1620 Woodland Ave.
Toledo, Ohio

$89

At Your Jobbers

HOW'RE YOUR BODIES TODAY?
THE GERSTENSLAGER CO., Wooster, Ohio
For 75 Years Building Just Good Bodies—Nothing Else.



REMOVED ALL THE GREASE!

That's what happened after a simple 15-minute application of MAGNUS CEMENT CLEANER AND RENOVATOR (92-P) in a large midwestern garage recently. And, for years that floor had never been cleaned except with water! MAGNUS 92-P not only CLEANS, but WHITENS and HARDENS the cement, as well. WRITE FOR our new 48-page "Automotive Cleaning Handbook," which describes cement floor cleaning with MAGNUS 92-P.

Magnus CLEANERS

MAGNUS CHEMICAL COMPANY
36 South Avenue Garwood, New Jersey

MARVELOUS NEW PAINT SPRAY GUN

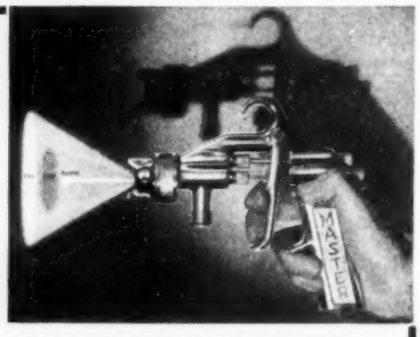
Handles all types paint, lacquer, etc., especially the new synthetic enamels. Lighter in weight, widest spray, perfect atomization, air purifiers, 5 and 10 gallon pressure outfits, accessories, etc.

Write for Catalog.

The Alexander Milburn Company
1411 W. BALTIMORE ST. - - BALTIMORE, MARYLAND

GOOD paint jobs require a good painter, and a professional painter must have the proper paint spray equipment. You cannot expect real paint jobs with old worn out and obsolete equipment. The new Master BC-2 Production Gun produces the smoothest finish you have ever seen.

Ask your jobber or write for particulars.



AMERICA'S SMOOTHEST SPRAY GUNS
PRICED AT ONLY $17.50

ALSO TIRE BRANDING IRONS

BURNING BRAND CO., 1408 W. FULTON CHICAGO, ILL.

Basic Principles of Fleet Operation

(*Continued from page* 26)

In conclusion, I point out that true efficiency is measured by results obtained compared to attainable standards set.

The establishment of standards, of selection, of operation, and of maintenance is highly important if "rule of thumb" is to give way to "rule of reason."

●

It's Here—An Appearance Yardstick

(*Continued from page* 28)

"In summarizing the results of such a survey, score the panel numbers as in a track meet, divide by the total number and you have the number of the test-panel which establishes or represents your *average* vehicle appearance.

"Knowing your painting costs and the age of the finish on each vehicle thus surveyed, you can figure out the increase or decrease in cost of improving or lowering your appearance-level. Likewise you can figure the benefits and comparative cost of solvent-cleaning and polishing, additional washing, etc.

"Having done all this, you can then tell your management: 'If you will spend *so much money*, you can have *such-and-such* a condition of vehicle appearance.' Decide which panel represents your 'minimum' before repainting and GO-TO-IT!"

●

Maintaining a Municipal Fleet

(*Continued from page* 20)

the direct supervision of R. B. Jett, Superintendent of the Motor Transport Department.

(Editor's Note: We are indebted to S. E. Houston, of International Harvester, for the data and photographs which accompany this article. Mr. Houston has been in close touch with Mr. Jett and both of these gentlemen deserve our sincere thanks for their co-operation in making possible the publication of this article.—H. C. F.)

●

Safety Hints from the Bay State

SEVERAL serious accidents have occurred recently in which passenger vehicles at high speed have crashed into the rear ends of parked or slowly moving trucks. While the truck operators involved may not have been entirely at fault, these accidents indicate that all commercial vehicles should be checked for faulty equipment, particularly lights and brakes. The ravages of winter work serious harm on this vital safety equipment, therefore, no time should be lost in making sure that all equipment is in mechanically perfect condition.

Prepare your vehicles for night parking by making sure that on each vehicle the tail light is in working order and the red reflector is clean. On the open highways, commercial vehicle operators should pull well off to the right side of the highway and never stop on curves or hills unless the vehicle has broken down. If forced to stop at these danger spots the operator should be sure that the truck can be seen, by lighting flares or other signalling devices as a help in means toward preventing collisions.—*Governor's Committee on Street and Highway Safety, Boston, Mass.*

Right of Way Versus Right to Live

By Marcus A. Dow

Manager, Department of Safety and Personnel, Greyhound Management Co., Cleveland, Ohio

THE commonly accepted rule is that at street and highway intersections not controlled by traffic signals or traffic officers, the person approaching on the right shall have the right-of-way. I know of no rule, however, that gives any person the privilege of driving recklessly over a street or highway intersection simply because he has the right-of-way.

A proper interpretation of "Right-of-way" is, generally speaking, that the vehicle arriving at an intersection first shall have the right to cross first, but that when two vehicles on two intersecting thoroughfares reach the crossing at exactly the same time, the one on the left would give way to the one on the right. It is a rule of courtesy as well as safety. It is intended to remove the need of argument when two motorists who have reached the crossing simultaneously must determine which of them shall cross ahead of the other.

The trouble is that too many motorists abuse their right-of-way privilege. They simply assume that the other driver will stop and let them pass and do not slow down and make sure of it. They depend upon the driver of another car whom they do not know to protect them from an accident. They know not whether this other driver is drunk or sober, whether he is careful or reckless, whether he has good brakes or poor brakes, whether he is an experienced driver or a "greenhorn". Yet they depend upon that unknown driver to make it safe for them to pass over an intersection.

Cloaked in the uncertain protection of a so-called right-of-way rule, they throw precaution aside and without slowing down, without even looking, drive over the crossing at a dangerous and reckless speed, forcing their way through like the blast of a tornado. If any right-of-way rule is to be a safe method of traffic regulation, then motorists must be educated not to abuse their rights under that rule. They must be taught that it is not a rule which makes caution unnecessary. No right-of-way is actually established until one of two motorists has conceded it to the other.

The reason the general rule as to which vehicle has the right to cross an intersection first, fails to prevent accidents so often is that motorists evade accepting any personal responsibility for safety. One-half of them seem to try to put the responsibility for safety upon the shoulders of the other half and the other half refuses to accept it. As a result the highways are strewn with the wrecks of cars that have crashed into other cars and the record of killed and injured has become a national disgrace.

●

Sales Representatives Wanted (Adv.)

SALES Representatives Wanted—To handle line of equipment for jobbers, car dealers and distributors, service stations, garages and fleet owners. Also have repeat features.

Will consider manufacturer's agents if in position to properly cover territory and devote time necessary to solicit all classes of prospects.

Full details as to qualifications, territory regularly covered and all lines now handled must accompany application. Address Box 1905, FLEET OWNER, 90 West St., New York City.

Amazing Results Secured by Fleet Owners!

OAKITE COLD-STRIP* METHOD

Removes Paint from Trucks in Record Time!

Saves Money! No Heat Required!

Every fleet owner and operator should investigate the OAKITE COLD-STRIP method for removing paint and synthetic lacquers from trucks. With OAKITE COLD-STRIP, paint removal becomes an easy, low-cost operation. Large surface areas are covered quickly . . . 100 square feet in 1½ minutes! Jobs that previously required days to strip are done in half or one-quarter the time!

Spray on OAKITE COLD-STRIP . . . then RINSE OFF!

You simply spray on OAKITE COLD-STRIP, let it remain about fifteen minutes . . . then *rinse off* with COLD water! That's all! No heat is required. There are no fumes. Several coats of paint are easily removed with the first application.. Where there are ten, twenty or more coats and it is desired to strip right down to metal, additional applications may be necessary.

Fleet operators now using the OAKITE COLD-STRIP method say it is the most outstanding development in paint removal and fills a long desired need in this field.

Without obligation on your part, let us send you additional details on this NEW method and find out how you can use it in your maintenance work. A five minute test demonstration will convince you! Write today!

★ *OAKITE COLD-STRIP originated by the Oakite Research Laboratory and Serviced only by Oakite Representatives.*

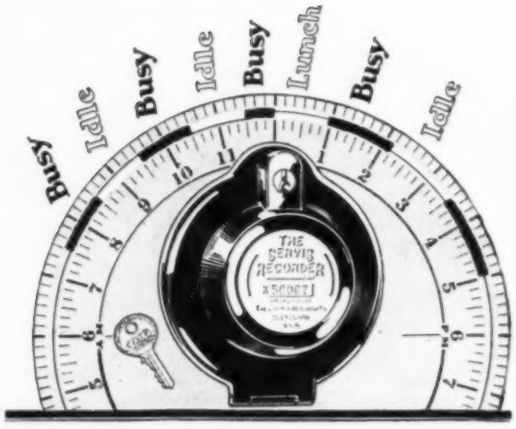
OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

OAKITE PRODUCTS, INC., 52 G THAMES ST.
NEW YORK, N. Y.

NEW PROBLEMS *for Truck Owners!*



DRIVER FATIGUE . . . Legislators are taking notice of it . . . looking into the *hours* of drivers' time . . . wondering if *you* are working your drivers too long.

✓ The Servis Recorder *helps here*

ACCIDENTS . . . are being blamed on too long hours, when often fatigue has nothing to do with it; instead, *making up wasted time* is the big cause.

✓ The Servis Recorder *helps here*

OVERTIME . . . no exceptions, today. It is paid for thru the nose. Overtime is often unnecessary and often can be eliminated.

✓ The Servis Recorder *helps here*

HI-JACKING . . . a new "industry" for crime . . . means that trucks must keep to their routes, and *keep to schedule* on those routes, for protection.

✓ The Servis Recorder *helps here*

Mr. Truck Owner: — No longer can you afford to be easy-going. Outside events now compel you to make sure that your house is in order. Public opinion also is at stake; you want it on your side. Legislatures often do strange things, but they never go against public opinion. Write for full information.

THE SERVICE RECORDER CO., CLEVELAND, OHIO

An Interesting Court Decision

THE Supreme Court of Iowa recently made a far-reaching decision respecting negligence on the highway.

It held that a motorist who collided with the rear of an unlighted truck parked on the highway, while driving at from 40 to 50 miles an hour, was held guilty of contributory negligence and could not recover damages.

The facts showed that the motorist was blinded by the lights of an approaching machine, and in losing visibility crashed into the truck.

The plaintiff, the motorist, contended that the verdict of the lower court was contrary to the evidence and the law on the ground that the evidence disclosed a recklessness as well as negligence on the part of the defendant truck operator; that the plaintiff was free from contributory negligence, and that if plaintiff was contributorily negligent, such negligence would not be a defense as against recklessness. The court said:

"It must be conceded that the defendant was negligent in leaving his unlighted truck parked upon the highway, as is disclosed by the record. There is, however, absolutely no evidence of recklessness as that term has been defined by this court."

From the evidence presented, the court held that the failure of the plaintiff to observe the provisions of a statute which provided that "no person shall drive any vehicle upon a highway at a speed greater than will permit him to bring it to a stop within the assured clear distance ahead," caused or contributed to the cause of the accident in question.

Commenting on the plaintiff's contention that he was blinded by the lights of an approaching car, the court said:

"When the plaintiff lost visibility because of the lights of the approaching car, he should have reduced his speed so that when he lost all visibility he could stop immediately. Had he done this, the accident in question would not have occurred. The approaching lights did not constitute a diverting circumstance and plaintiff should have either discovered the presence of the parked truck in the road in time to avoid a collision or should have reduced the speed of his car to such an extent that would permit him to stop within the assured clear distance."

ARMORPLY

A SUPERIOR METAL FACED PLYWOOD PANEL FOR BODY CONSTRUCTION

Write for samples and prices

UNITED STATES PLYWOOD CO. INC.
603 W. 36th. ST. NEW YORK CITY

The BIG LIFT

Here's tremendous power, wide range, easy operation—in a full line of hydraulic jacks, hand and floor types, from 1 to 75-ton capacities. For floor, curb, road, and shop use — Buy Blackhawk. Ask your Jobber Salesman. Write us for literature.

Blackhawk Mfg. Co.
Dept. F. O. 6 Milwaukee

BLACKHAWK HYDRAULIC JACKS

The Insurance Picture in Fleets

(*Continued from page* 44)

most perplexing problems."

"Drivers are checked for 'ability' every 30 days."

"Our Insurance costs have dropped; probably due to better roads, better driver training, better vehicle condition and the times."

"We carry our own collision coverage, saving about 80%."

"Truckmen and merchants must beware of assuming liability that is not covered by regular insurance."

"Insurance costs are too high; and going up each year."

"We would like insurance against shyster lawyers and philandering medicos."

"Collision insurance too expensive; cost not justified."

"Driver bonus awards based on appearance of trucks and accident record."

"Careless drivers immediately discharged."

"Governors have helped to cut our accident costs."

"Passenger cars are insured at $.005 per mile; Trucks on a unit basis."

"Insurance rates of all kinds are too high."

Undoubtedly many fleet operators (and insurance companies) who read this article will wonder just how *representative* this "survey" really is, what types of fleets participated, in what parts of the country they are located, and about how many vehicles each of them operate? So here is a breakdown of the 200 operators who participated, God Bless 'em!

"There were 40 trucking companies, both long-distance and local haulers; 15 contracting firms; 15 dairies and creameries; 12 manufacturers having fleets; 12 bakeries; 12 public utilities, including telephone companies; 11 meat packers; 10 bus operators; 9 oil companies; 9 county departments; 8 groceries; 7 laundries; 7 ice and coal companies; 7 municipalities; 5 department stores; 5 taxicab companies; 4 state highway departments; 2 newspaper publishers; 2 ice-cream companies; 1 bottling company and 7 miscellaneous types of fleets.

Fleet operators from 46 states in the Union participated, including some from as far West as California, Oregon and Washington; as Far North as North Dakota; as far South as Florida and Texas; and as far East and North as Maine. So you see, gentlemen, this information is *quite* representative.

"Were they small fleets or large ones?" someone is bound to ask. The answer is that they were *all sizes* of fleets. Some had fifteen, and some had several hundred vehicles. In fact, the *average* number of vehicles per participating fleet is about 131. The vehicles themselves are distributed as follows: 16,688 trucks and tractors, 1,719 trailers, 6,856 passenger cars, 759 buses, and 201 miscellaneous vehicles. Adding them all together, the grand total is 26,223 vehicles.

As stated previously, we have made a typewritten tabulation of this survey, for easy reference. Copies have already been furnished to those operators who participated in it. We have a few more on hand, which we will be glad to furnish, gratis, to any interested fleet operators, even though, technically, they are not entitled to it. However, since one can "catch more flies with honey than with vinegar," we are waiving our rule in this instance, the thought in mind being that perhaps after an operator once *sees* what he will get, in return for a few minutes' work each month, he will feel more like participating in a very worthy cause.

On page 51 of this issue, there is a questionnaire on a *new* subject. A new subject is "surveyed" each

A
SAFEGUARD
FOR FRICTION PARTS

The gruelling conditions under which the present day engine functions make extra protective measures imperative. ⋄ "Dag"★ Brand colloidal graphite when incorporated with a high grade mineral oil has unquestioned value as a break-in lubricant. The graphoid surface established on the friction parts protects against metal-to-metal contact in cases of momentary oil film rupture and aids in a quick return to full film lubrication. The extreme chemical inertness of Acheson colloidal graphite insures positive performance with alloy bearings ⋄ There are numerous excellent adjunct lubricants now available containing this material. ⋄ Write for Bulletins 112M describing the run-in of internal combustion engines with colloidal graphite and 40M discussing typical crankcase analyses.

★Reg. U. S. Pat. Off.

REG U.S. PAT. OFF. dag COLLOIDAL PRODUCTS

ACHESON
COLLOIDS CORPORATION
FOUNDED [1908] AS ACHESON OILDAG COMPANY
PORT HURON • MICHIGAN

The New AETNA BALL BEARING CLUTCH RELEASE UNIT

For ½ and 1½ Ton 1932, 1933, 1934, 1935 Model CHEVROLET TRUCKS AND PASSENGER CARS

The *New* AETNA BALL BEARING CLUTCH RELEASE UNIT *eliminates* Chevrolet Clutch Release Bearing Troubles! It is made for all ½ and 1½ ton Chevrolet trucks and passenger cars, 1932, 3, 4 and 5 models.

Twenty-eight months of road and laboratory test, involving as many as 1¾ million declutchings, proves Aetna Self Lubricating Ball Bearing Clutch Release Units! *They require no lubrication—they eliminate maintenance and repair costs—they remove noise and chatter!*

Designed, tested and proved by Aetna, these bearings are recommended for installation in every troublesome clutch assembly.

The Aetna Ball Bearing Clutch Release Unit is extremely simple in design and, being shipped assembled, requires only the removal and discarding of the old graphite bearing, collar and cover plate, grinding of the clutch finger tips, riveting of contact rolls in lug recesses of fork and installing. It's simple — it's quick — it's easy. And once installed it needs no care, oiling or attention.

As a special inducement we are offering for a limited time only, a single trial unit at $4.50. List price is $7.50.

Order a trial unit today! Test it out in any way you want! Convince yourself of our claims! Eliminate lost time, clutch maintenance, lubrication costs and clutch repair bills!

AETNA BALL BEARING MANUFACTURING CO.
4604 Schubert Avenue, Chicago, Illinois
Offices in Principal Cities

SPECIAL CASH OFFER

We will send *one only* trial unit at $4.50. Net price $7.50. Include postage for parcel post delivery in check. (Weight 3 lbs.)

$4.50

month. This work is done primarily for the fleet operator's benefit, and if *more* operators would participate, it would please us greatly. All you have to do is turn to that page, fill out the blank, and mail it in to the Editor, who happens to be Yours Truly. If you cannot answer all of the questions, just answer those you can, and leave the rest blank.

In return for your efforts, we will send you a tabulated, typewritten resumé of all the answers. Many operators have told us that they save these tabulations, filing them directly under the subject discussed, where they will be handy for future reference. This month the questionnaire covers "Cooling System Servicing." It's on page 51 gentlemen. We'd appreciate your cooperation. The more, the merrier; and the more *representative!*

●

Latest S.A.E. Handbook Now Available

CONTAINING in definitive form, the results of three important S.A.E. Standards projects completed during the year 1934, and many other important revisions and additions, the 1935 edition of the S.A.E. Handbook is now being distributed.

Of the new material in the Handbook, perhaps the most important inclusion is a complete revision of the Iron and Steel Specifications and the Non-Ferrous Metals Specifications. The last complete previous revision in these categories was made in 1922.

Other new material in the Handbook includes revised tables of screw threads and bolts and nuts which have been established as American standard under the sponsorship of the S.A.E. and the A.S.M.E. There has been added to this group a series of valuable tables covering special-pitch threads.

Complete explanation is given in the Handbook of the three cost classifications or cost record plans designed to serve different sizes and types of motor-vehicle fleet operations. A separately published pamphlet of this report includes types of all the necessary forms that are required for using the Uniform Motor-Vehicle Operating Cost Classification.

Another set of forms which is expected to find wide use in the automotive industry provides for uniform reporting and filing of motor-vehicle lubrication data. By obtaining a supply of this S.A.E. standard form to cover his new vehicle models, the motor-vehicle manufacturer will be enabled to send to every source requiring the information complete standardized and accurate data about the lubrication of his vehicles, at a minimum of cost and effort.

Spark-plug specifications appearing in previous editions of the Handbook have been revised and brought up-to-date and are thoroughly in accord with modern practice in this branch of the automotive engineering art.

Revised specifications for reflex reflectors used on motor-vehicles and in laboratory tests of electric headlamps are also included.

Because of the frequent changes in tire and rim practices, the obsoleted previous specifications have been omitted, especially as up-to-date specifications are obtainable through the Tire and Rim Association.

Data have been included covering the oval diameters for tanks on fuel tank trucks. These data have been added as a result of a cooperative project with the American Petroleum Institute and a Committee of the Tank Manufacturers lasting two years.

The storage battery specifications have been brought up-to-date and valuable new information on the method

of testing has been included in the 1935 edition of the Handbook.

The complete report of the Automotive Transportation Code Committee has been published in the 1935 edition of the Handbook as a guide in connection with motor-vehicle regulatory and similar matters.

The new edition contains 672 text pages and 24 pages of index. Non-members may obtain copies at $5.00 each. Address, Society of Automotive Engineers, 29 W. 39th St., New York City.

●

More About the "Doze of Death"

SAFETY and comfort are the two goals toward which tire manufacturers have been striving ever since automobile wheels were first shod with rubber. Through the years, each new advance in the development of tires has meant a larger, softer tire with more air volume at lower pressure, providing more safety and more comfort to those who ride.

While no one has yet advanced the idea that a car can be too safe, a vice-president of one of the country's largest truck manufacturing companies, recently declared at safety conferences in New York that it is possible that motor vehicles can be made so comfortable that the safety factor is lowered.

"Beyond a certain point," he said, "it is questionable if added refinements in a car would not induce the 'doze of death' which we seek to avoid. We should provide enough comfort to prevent physical weariness and, at the same time, impose enough responsibility to prevent monotony and mental weariness."

W. O'Neil, president of General Tire, on the other hand, declares that the amount of comfort that can be built into a tire should not be limited by the possible soporific effect of this comfort on the driver of the car.

"Persons who want maximum comfort in their cars and tires should not be deprived of that high degree of comfort because it might possibly lull some drowsy driver into dozing while at the wheel," he said. "There will always be drivers who will insist on operating cars when they are too fatigued to do so safely, no matter how comfortable or uncomfortable the cars and tires may be."

"It is the normal, average driver who must be considered. If modern, tires at low air pressure make motoring more comfortable as well as safer for him, then he is entitled to that comfort."

●

A Highway-Money Trap

STATE legislators have risen to great heights of ingenuity in contriving methods to use highway tax proceeds for general governmental expenditures, National Highway Users Conference points out.

Now comes Oklahoma with a sterling example of the extent to which consistency can be set aside by lawmakers who are determined to scoop money out of highway funds for expenditures not connected with highways.

The first section of the new Oklahoma law, which became effective April 22, and which automatically terminates July 1, 1937, reads as follows:

"Section 1. That to compensate the State of Oklahoma for the use of its highways, the police protection afforded owners of motor vehicles, making a more complete record and history of each motor vehicle licensed to operate over the highways of the State of Oklahoma,

Short Line
BUCKEYE STAGES
BUCKEYE STAGES TOURS, INC.
AMERICAN STAGES, INC.
Columbus, Ohio
World Bestos Corp.
Paterson, N. J.
Gentlemen: Your "Prescribed Friction" Sets on our Motor Coaches have proved highly satisfactory and have given us better stop than we ever anticipated. Service and co-ion through your "FLEET SERVICE PLAN" deeply appreciated.
J. G. Malley
Supt. Maint.

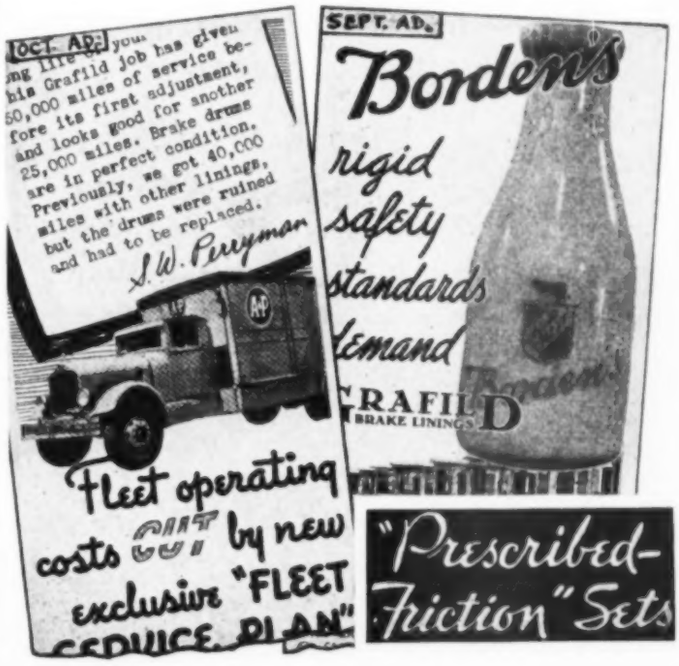
Another heavy-duty Fleet CUTS costs by exclusive "FLEET SERVICE PLAN"

The great Short Line bus fleets of the American and Buckeye Stages join the nation-wide chorus endorsing our new exclusive **FLEET SERVICE PLAN** that is cutting operating costs for fleets large and small.

The **FLEET PLAN** is simple yet scientific and foolproof. Just file a list of your fleet with our nearest jobber on his special forms. Our Engineering Department will prescribe the exact friction lining combination for each shoe of each brake, to insure maximum performance and longer life.

These combinations—each a precise friction "prescription"—are then packed in sealed cartons as **"Prescribed-Friction" Sets**, with full installing and trouble-preventing instructions. No more compromising, no guesswork cutting from rolls, no wrong linings, no long "lay-ups" for brake repairs (and fewer repairs necessary).

Our jobber need carry only a minimum stock of **Sets** to service any vehicle in your fleet promptly. It will pay every fleet owner and jobber anywhere to get details at once. World Bestos Corp., Paterson, N. J.



IT *Protects*

YOUR EXPENDITURE . . .

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These factors are worthy of your careful consideration.

Join the C.C.A. by all means if you can but in any event use its audited statements and demand similar authentic circulation data from publishers who are not members.

CCA

and to effect the recovery of stolen cars, an excise tax of one (1%) per centum of the value of such vehicle is hereby levied upon every motor vehicle, automobile, motor truck, motor tractor, trailer, semi-trailer, tractor motorcycle and motor bus as defined by Section 1, Chapter 290, Oklahoma Session Laws 1919; provided, that said excise tax shall be levied and collected only at the time a motor vehicle is first licensed in this State."

The next four Sections deal with procedure. The sixth Section reads as follows:

"Section 6. Ninety-eight (98%) per centum of all moneys derived from the excise tax levied and collected under this Act shall be by the Oklahoma Tax Commission paid into the State Treasury to the credit of the General Revenue Fund of the State of Oklahoma to be used for general governmental functions, to be paid out only upon appropriations by the Legislature."

Section seven provides for enforcement and Section eight allots the remaining 2 per cent of the funds to the Oklahoma Tax Commission Fund to be "used for the enforcement of this Act, and for the employment of necessary assistants and employees required to carry out its terms."

The tax is in lieu of "all other taxes" except registration fees, mileage taxes or any other fees under the jurisdiction of the Corporation Commission, making it absolutely "in lieu" of nothing.

In short, the law places a new tax on highway users with the action being accompanied by the declaration that the money will be used to aid highway operations. Then, without even the veil of a separate legislative enactment, it authorizes use of ninety-eight per cent of that money for purposes having nothing to do with highways.

●

Rear-End Gear and Axle Maintenance

By Roy Mason, Supt. Trans.,

Kansas City Gas Co., Kansas City, Mo.

"REAR-END trouble is almost out of date with us, as the gears and axle-shafts of today's production, with normal use, will in most cases last the life of the car or truck. Lubrication is done four times per year; adjustment twice per year. We do not use extreme pressure lubricant, but use a good gear oil—about 10 gallons per month.

"All of our repair work is done in our own shop, securing the parts from dealers and jobbers, and specifying the make of parts desired. There seems to be no difference in quality of the standard manufacturers' parts. We always order matched sets and replace in pairs—*never* one gear only.

"Our most common rear-end trouble is grease leakage. No mechanical troubles on models built after 1930. We operate a fleet of 52 trucks and 38 passenger cars."

●

Valve and Valve-Seat Maintenance

By W. T. Bowers, Foreman,

Schluderberg-Kurdle Company, Baltimore, Md.

"WE reface all valves on a B & D refacer and also use grinding compound of the oil-mixed type, where necessary. For the valve seats we use either a seat-reamer or an electric stone, using the

latter wherever possible. This stone works concentrically. We do not finish-grind with compound when using valve machinery, unless the valves fail to hold 10 lbs. pressure, determined with a tester.

"Our valve seat insert experience has been with flat seats in trucks. We have installed some of these and find them very satisfactory. Some of our new equipment has hard-faced valve seat inserts and we also find them satisfactory; they have extended the interval between valve grinds from 20,000 to 60,000 miles.

"We have no special time to grind valves. The motors are checked every 5,000 miles and the necessary repairs are made. We have facilities for checking compression and determining if the trouble is with rings or valves, and any variation of over 5 lbs. is immediately corrected. If any trouble develops between these inspections, the drivers bring their vehicles in.

"Replacement valves are obtained from jobbers, when possible. We operate a fleet of 48 trucks and 40 passenger cars."

●

Freight Hauler Prefers Mutual Companies

(Location: Eastern North Carolina)

Operates: 15 Trucks
14 Trailers
3 Pass. Cars

"OUR truck insurance is now carried with a mutual company, and our passenger cars are still with an old line company. On the trucks we carry personal liability, property damage and cargo insurance. Complete coverage is used on the passenger cars, with a $50-deductible clause for collision insurance.

"Public liability and property damage has been our most unreasonable cost. For the past four years we have paid the stock companies in excess of $9,000 for this coverage, and their own records indicated that they had only been charged as expense the handling of claims, which amounted to $347.00 during this period.

"Despite this fact, year after year our premiums would be increased. We would get a substantial experience discount ranging from 35 to 65 per cent. Our state rates, however, were always boosted more than our discount.

"On the last 75 per cent boost in state rates we turned to a mutual company, where we are paying about 30 per cent in excess of the rate we had two years ago.

"Compensation insurance is our next largest item, and we anticipate changing this to a mutual company on our next renewal, as this is compulsory in our state. Our total insurance cost runs about $.0095 per mile. Annual mileage is about 500,000 miles. We carry $10/20,000 public liability. A safety engineer is provided by the insurance company."

●

Experienced Fleet Mechanic Available (Adv.)

FIRST class fleet mechanic desires position with car or truck fleet in Metropolitan New York. Can take full charge or assist. Thoroughly experienced on most makes of cars and trucks. American—white—Age 26. Have complete set of good tools. Previously with small milk company fleet.—Address D. G., c/o Editor, FLEET OWNER, 90 West St., New York City.

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Although they are sometimes unavoidable, I dread accidents like the plague—not only because of their threat to human life, but also because of what they will do in demoralizing a shipping department.

A good brake lining cuts accidents down to a minimum. That's why I use SCANDINAVIA. My Drivers are not afraid of emergencies. They *know* they can stop no matter how heavy the load. And I know that SCANDINAVIA gives me complete braking safety and efficiency—besides cutting down my maintenance costs.

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Fleet Demonstrates Shop Equipment

DAY in and day out, the fleet of demonstrating service trucks maintained by the Sunnen Products Company, 7911 Manchester Ave., St. Louis, is making calls on shops the country over to demonstrate the latest developments in the field of motor reconditioning.

These trucks are completely equipped with many of the newest and most modern tools and shop equipment.

Each truck is in charge of a factory-trained man whose job is to bring to the shops on which he calls the newest time and trouble saving methods.

The Sunnen engineering staff in St. Louis has found that this method enables shops to keep pace with the many new developments in the maintenance industry.

●

Waxing Process Provides "Shrinkproof" Wood

WOOD that does not warp or shrink—completely sealed with waxes that resist the ravages of moisture—may be science's answer to demands of wood users for a more perfect working material. A new process for achieving greater permanence in this way has been developed by Dr. A. J. Stamm, chemist of the Forest Products Laboratory, it was announced recently by the Forest Service, U. S. Department of Agriculture. If successfully applied on a commercial scale, according to the Forest Service, the new process opens up possibilities of finer craftsmanship in wood and better service to the user than have yet been attained.

A thoroughgoing treatment, such as this process affords, gives far better insurance against future seepage of moisture into the cell walls of wood than ordinary surface treatments with antishrink materials, Dr. Stamm points out, because the latter can be impaired by cutting, nailing, or continued wear.

The process developed at the Forest Products Laboratory, the Forest Service's wood research institution maintained at Madison, Wisconsin, has definite advantages over older methods. Previous attempts along this line to make woods less vulnerable to weather have been confined to direct impregnations of wax into the gross capillary structure of dry wood. Such processes, always incomplete, failed because, when treated wood was exposed to moisture, the water quickly penetrated the millions of unsealed cavities and invisible openings in the wood tissue.

Dr. Stamm's process makes use of an intermediary or transfer solvent. Green wood whose natural water-content keeps the submicroscopic membrane spaces wide open, can be used, thus eliminating the necessity for seasoning. "Cellosolve," the intermediary substance, is injected into the wood by a replacement process, dissolving into and replacing the water, which

(*Please turn to next page*)

because it boils at a lower temperature than does cellosolve, is distilled off.

Impregnated with cellosolve, the wood is next placed in a melted wax bath, and the replacement process is repeated, with the wax dissolving into and replacing the cellosolve, which is in turn distilled off. Beeswax and stearin are two of the waxes successfully used in the process, but such substances as rosin and linseed oil can also be used with waxes in many combination.

An important feature of the new process is the fact that the green wood, when filled with waxes, very nearly retains its natural size even through wide changes in the moisture of the surrounding air. There is no initial damage such as often occurs when green wood is dried, so that loss of wood from checking, bowing, twisting, and the like is largely eliminated.

•

Higher Octane Fuels Soon Available

A PROCESS for making 100 octane gasoline, expected to jump auto and plane speeds, was reported to the American Chemical Society recently. The octane number is the measure of resistance to knocking, and 75 to 80 is the highest quality commercially available.

The sensational performances expected from the new fuel are based on reports made recently by the U. S. Army aviators to the Institute of Aeronautical Sciences. They disclosed the Army had 1,000 gallons of a specially prepared, experimental 100 octane gasoline. It added 35 miles an hour to flying speed, with no other changes than draining and refilling.

•

All-Around Maintenance Man Available (Adv.)

A MAN who can make himself generally serviceable around a garage, factory or plant is in need of a position. He is not to be confused with the ordinary "handy-man" as he is a first-class mechanic on lathes and other shop machinery, a good electrician, carpenter and general mechanic. Can also do pipe-fitting and plumbing; in fact any kind of precision work requiring the use of tools. Salary of secondary consideration. Location, Brooklyn or Metropolitan New York preferred. Address C. P., c/o Editor, FLEET OWNER, 90 West St., New York City.

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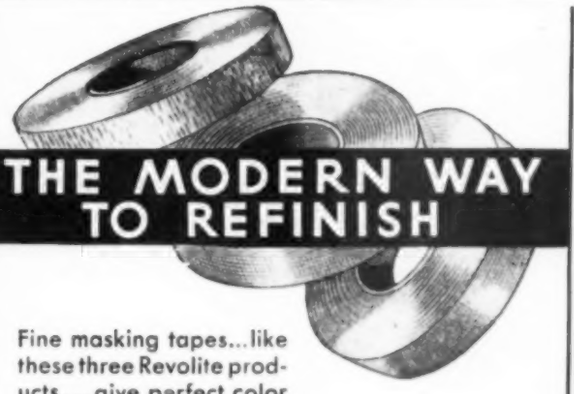

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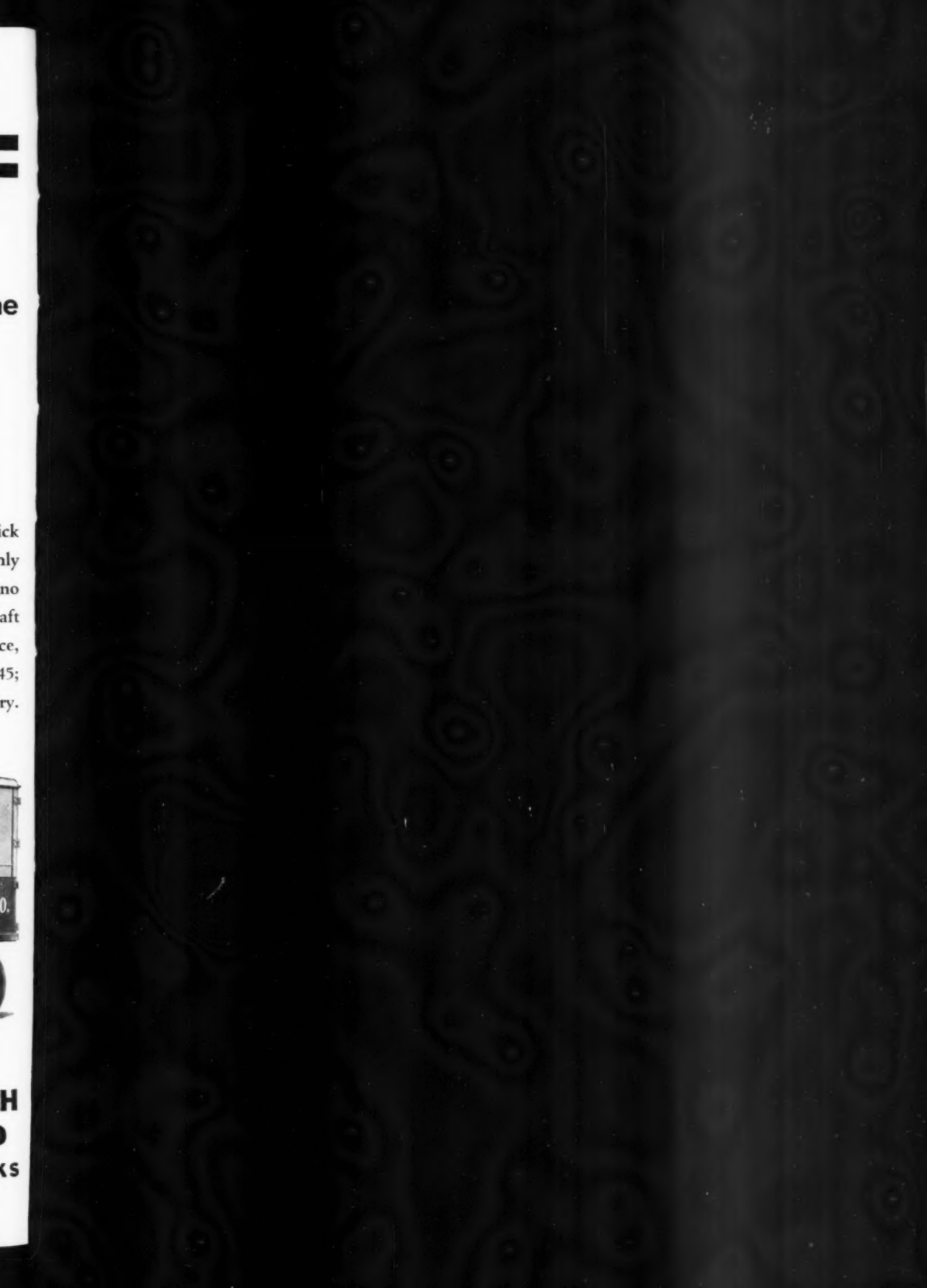
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